

JOURNAL

OF THE

American Veterinary Medical Association

FORMERLY AMERICAN VETERINARY REVIEW

(Original Official Organ U. S. Vet. Med. Ass'n.)

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No. 2

AN OPPORTUNITY FOR SERVICE

Many practicing veterinarians are complaining about practice not being as good as it should be. On the other hand, many owners of animals and poultry are complaining that veterinarians are not sufficiently alert as to what is needed and wanted in the way of veterinary services.

We are not ready to believe that both complaints are universally justified. It is undoubtedly true, however, that localities could be found in which either complaint could be substantiated. We think all will agree that veterinary service has not been fully developed to the point of maximum efficiency. With some exceptions, owners of live stock, poultry and pet animals have not come to realize the importance of health and sanitation or to place the proper value upon veterinary services in connection with the well-being of these animals. Most herd and flock owners do not as yet appreciate fully the close relationship between healthy animals and poultry and their economic production. On the other hand, too many veterinarians fail to appreciate the importance of bringing this truth to their actual, as well as potential, clients.

It would appear to us that in this particular connection there is an opportunity for the A. V. M. A. to perform a function

that would be to the mutual advantage of all concerned. Therefore, being deeply interested in the welfare of the veterinary profession and especially in those who are engaged in general practice, also being equally desirous of seeing things accomplished that will benefit our great live stock and poultry industries, it is suggested that the A. V. M. A. consider extending the scope of its activities by placing in the field a properly qualified and carefully selected man to go into the various sections of the country and arouse owners of live stock and poultry, as well as veterinarians, to their respective responsibilities, opportunities and possibilities in connection with the development, from a health standpoint, of a more efficient and prosperous animal and poultry industry.

We are now approaching the fifth anniversary of one of the most important steps in the history of the A. V. M. A., namely, the establishment of the official headquarters of the Association and the employment of a full-time secretary-editor. Developments of the past five years have shown the wisdom of this move. It is time that the members of the Association should be considering the next important step forward. The rapid growth in the variety and scope of activities conducted in the A. V. M. A. office at the present time, as revealed on a recent personal visit, clearly shows why it is an impossibility for the Secretary-Editor to be away from the office more than he is. Our Secretary-Editor has his office well organized and is doing splendid work, nevertheless, the time is at hand when serious consideration should be given to the enlargement of the Association's full-time staff.

If we could see our way clear to provide the Secretary-Editor with a capable assistant as a field secretary, the inauguration of such an enterprise by the A. V. M. A. would unquestionably be exceedingly helpful to owners of live stock and poultry, as well as to practicing veterinarians in all parts of the country. While we do not favor boundless expansion on the part of our national association, we do believe that its field of influence and activity should be widened from time to time in order that it may efficiently and successfully carry on its work. Many veterinarians complain because the A. V. M. A. is not doing more in their behalf and they give this as their reason for remaining outside of the membership fold of the Association. The placing of the right kind of a man in the field would be a convincing demonstration that the A. V. M. A. is alert to the interests of the practitioners and is making an honest effort to render them a

helpful service. There are many other ways, almost too numerous to mention, in which such a man in the field could be very useful in supplementing those activities of the A. V. M. A. which must necessarily be directed from the official headquarters.

Would not the above-suggested undertaking by the A. V. M. A. produce results that would be worth while? Although it would undoubtedly be necessary to draw upon our financial reserves for the time being, would such a move not result eventually in bringing into the Association a large number of eligible veterinarians who, for some reason, seem to have the feeling that there is nothing particularly to be gained by them through membership in their national organization?

T. E. M.

A WORTHY ORGANIZATION

At the meeting of the Women's Auxiliary to the A. V. M. A. at Lexington, Kentucky, the feeling was expressed that a wider interest in our organization might be aroused if the aims and objects of the Association were printed and circulated among our members, putting before them the need of maintaining their membership, year after year, and inducing others to join with us in carrying on to greater helpfulness the work so successfully under way.

Our object, as is well known, is to raise a sufficient amount to carry on the Student Loan Fund, a fund which has no other source of income than from the annual dues of the members of the Auxiliary.

At the Lexington meeting we were told the history of the Fund—how it was originally formed to give help to the families of needy veterinarians during the war. Later, when that need no longer existed, it was converted into a fund for helping worthy students of veterinary science. Up to the present time, loans amounting to \$2,425 have been made to various students, and nine senior students have been assisted at a time when they would have been forced to stop their college course, had it not been for this assistance from our fund. In every case the loans have been repaid when due, and with expressions of grateful appreciation from those assisted.

At a time when our funds were very low and there were several requests for aid, the American Veterinary Medical Association offered the use of funds from the Salmon Memorial Fund. Some

\$1,200 of this was accepted and used, and later repaid to the A. V. M. A.

Our hope is to interest the wives and daughters of all members of the A. V. M. A. to join with us and help us raise a fund sufficient to meet the needs of those asking our assistance. We feel that when this is fully understood, no one will hesitate to add her name to our roll of members. The fee for new members is \$1.50; annual dues, \$1.00.

Not only does the Auxiliary need your membership dues, but as our President, Mrs. Cotton, said in her annual address: "We need the cooperation of all." Among our members are many of talent and ability whose suggestions and advice would be of invaluable assistance to the officers, and we call upon all to respond to our invitation.

MRS. N. S. M.

THE WINTER MEETINGS

In this issue of the JOURNAL and the one immediately preceding will be found reports of about twenty meetings of state and provincial associations, short courses and conferences held all over the United States and Canada during the winter months. It would be impossible for any one to read these reports without being impressed with the fact that conditions in the profession generally are very much improved at the present time. The general tone of these reports is indicative of renewed interest upon the part of veterinarians in their professional organizations. Veterinarians in larger numbers made it their business to attend these meetings, not only because they were in a better position to do so than at times in the past, but members of the profession are beginning to realize the importance and necessity of better organization. Numerous incidents of the past few months have pointed very clearly to this fact.

It can be said truthfully that veterinarians have never organized for the promotion of any selfish interests. They have banded together in every instance for purposes which no fair-minded person would ever question. Every once in a while, however, the fact is brought to our attention rather forcibly that it is sometimes necessary for veterinarians to use their organizations for nothing short of self-defense. This is an age of organization. It has become so difficult to accomplish things nowadays through individual efforts, which are too often misguided, that the only answer is organized effort along properly directed lines. Mistakes

are much less likely to be made where there is counsel. On the other hand, the over-enthusiastic and misdirected efforts of one or two individuals can often defeat the efforts of a much larger, well-meaning number, no matter how well organized.

One of the first winter meetings to be held was that of the Illinois State Veterinary Medical Association, in Chicago, the last two days of November. Although the attendance was not up to that of some previous meetings, there was no lack of enthusiasm and the splendid program prepared by Secretary Welch kept the sessions well attended. One of the leading features of the program was a round-table discussion of sheep diseases, which continued until along toward midnight, reflecting the interest which practicing veterinarians are taking in this field. We have heard a little good-natured grumbling upon the part of Illinois veterinarians to the effect that too many meetings were being held in the State. The man in practice finds it rather difficult to attend an unlimited number of meetings, no matter how important they are or how attractive the programs may be. The natural result of too many meetings is a falling-off in the attendance of each one. This may have both its advantages as well as disadvantages and the present problem is one which the Illinois veterinarians must work out for themselves.

The Nebraska meeting, held about the middle of December, was a very successful one, both from the standpoint of attendance and interest. It was an unusually large meeting, more than 180 people being present at the banquet. The Delaware veterinarians met December 17, and Secretary Levinson reported that 1926 was one of the best in the history of the Association. The report of the annual meeting of the Nevada State Veterinary Association, held early in January, would indicate that the attendance approximated 100 per cent. This is the only report received from the far West. The 1927 conference at the University of Pennsylvania is reported to have been the best attended of any conference in the history of these annual gatherings. All sessions were unusually well attended and interest was maintained until the last word was said.

Although the second week in January was marked by an unusual conflict in dates, involving the meetings of several of our largest state associations, this fact did not appear to affect the general attendance to any serious extent, although it did interfere with the plans of several of the secretaries in arranging their programs. Secretary Fitch reports the active membership

of the Minnesota State Veterinary Medical Association as 222. He also is the authority for the statement that the attendance reached 248 at one of the sessions. This fact speaks for itself. Undoubtedly no small amount of the enthusiasm shown at the Minneapolis meeting was stimulated by the possibility of getting the 1928 meeting of the A. V. M. A. for the Twin Cities.

The conference at Cornell University was the nineteenth and, according to our resident secretary for New York, Dr. C. E. Hayden, the attendance this year was better than that of any previous conference. One of the most significant comments relative to the program was to the effect that the practitioners appeared to get more help and inspiration this year than upon any previous similar occasion.

Simultaneously with the Minnesota and New York meetings, the Ohio State Veterinary Medical Association met in Columbus. Although no report of this meeting has been received, it was possible for us to be present for one day and the general atmosphere of the meeting left no doubt as to the improved conditions existing throughout the Buckeye State. Ohio is one of the very few states to publish the proceedings of the annual meetings. The 1927 Year-Book will probably appear in the near future.

Although the report of the Virginia meeting contained no superlatives, it would appear that the 1927 meeting was fully up to the usual high standard of meetings held in that State. The same may be said of the meetings held in Mississippi and Arkansas. The membership in these states is not large, but their meetings never lack enthusiasm and the programs arranged this year were unusually well-balanced and attractive.

The Texas meeting was attended by seventy-five veterinarians, although this was not the annual meeting of the Association. This will be held in June. The Kansas meeting is reported to have been a very interesting one. The field of general practice received the lion's share of attention, so far as the program was concerned. It is always pleasing to look over a program and find that practitioners are holding up their end in contributing to the success of such meetings.

Without question, the meeting of the Iowa Veterinary Association was the largest veterinary gathering of the season. Secretary Steel has reported an attendance of over 400, with the admission of thirty-five new members. The number in attendance at the banquet exceeded the 500 mark, there having been almost 200 more present than at any previous similar occasion.

Secretary Steel inaugurated a system of registration at the meeting, so that it was possible to keep from the meeting anyone whose presence was undesirable for any reason. The membership of the Iowa Association is now said to be 499. It is too bad that Secretary Steel could not get that other member.

The Hoosier veterinarians had an unusually successful meeting at Indianapolis the same week. No official report for publication has been received from Secretary Boyd, although the latter is authority for the statement that the membership of the Association was increased to the extent of fifty-two members, during the meeting. As previously recorded, Dr. F. J. Muecke, A. V. M. A. resident secretary for Indiana, took advantage of the opportunity and secured thirteen applications for membership in the A. V. M. A., as well as one application for reinstatement.

The Maryland meeting was an unusual one in that two Cuban Army officers and twelve United States Army officers were in attendance, as guests of the Association. Secretary Pickens claims that this is a record attendance of army officers at a state association meeting. The program was unusually well-balanced with contributions of both a practical character as well as scientific. During the last week in January, the Michigan State College offered the fourth annual post-graduate short course for veterinarians and the attendance exceeded all previous records. This is especially noteworthy, in view of the fact that this course is undoubtedly the longest course of its kind offered any place in this country.

The Tennessee veterinarians held their nineteenth annual meeting in January and the features of the program were the lectures and questionnaires in the different fields of practice. This kind of a program is being used to considerable advantage by a number of the state associations.

The report of the special course offered graduate veterinarians by the University of Missouri in conjunction with the State Association appears elsewhere in this issue and letters received from a number of veterinarians who were in attendance indicate that the four days of the course were spent with considerable profit. Secretary Ray reports that the attendance exceeded ninety and the membership of the State Association was increased by twenty. In Canada, during February, meetings of the Ontario and Manitoba provincial associations were held and the attendance was highly satisfactory in both cases. Reports of

both meetings are being published in this issue of the JOURNAL. Later in the month the Florida veterinarians met at Gainesville for their annual meeting. Secretary Shealy reports a large attendance and an interesting program.

Several other state associations met during this period, but reports have not been received from the secretaries. President Sigler was able to leave his practice long enough to attend the Illinois and Indiana meetings and the Cornell Conference. The Secretary-Editor was compelled to limit his visits to the Illinois, Indiana, Ohio and Michigan gatherings. Some time in the near future we are going to say something on the need for more teamwork and cooperation among the various associations in the matter of arranging dates. There were no less than twenty-four meetings held in January.

EXECUTIVE BOARD ELECTION

Nominations are being received for member of the A. V. M. A. Executive Board for District No. 1 (Canada). Any of our Canadian members who have not voted should do so at once. The field is wide open. Any member in Canada is eligible. Remember that the five members standing highest in the nominating polls will constitute the ticket. The names of sixteen nominees appear on the ballots already received. The polls will be closed May 16 and ballots for the election proper will be mailed immediately to all paid-up members in the District.

MEMBERSHIP DIRECTORY

A new edition of the A. V. M. A. Membership Directory is now on the press and will be ready for distribution early in May. A copy will be mailed to every member. The Directory will contain the Constitution and By-Laws as amended to date. Complete lists of all officers and committees will be included, as usual, as well as lists of past officers and previous meetings.

The names of our active members are arranged alphabetically. Suggestions have been received, from time to time, that some other arrangement would be preferable. Probably the suggestion most frequently made is to arrange the membership list by states. Another suggestion is to indicate the college from which each member was graduated, as well as the year. It has even been suggested that the members be classified in some way, so as to indicate the branch of the profession in which each man is engaged,

for example, practice, B. A. I., commercial work, etc., as the case might be.

All of these suggestions are being kept in mind. Each one has merit and would serve a useful purpose. Some may be adopted in future editions. In such matters we must keep an eye on the cost, and the adoption of any one of the suggestions made would increase materially the cost of publishing the Directory.

PRESIDENT SIGLER HAS A FALL

President Sigler is recovering from an injury received in March. A fall resulted in a badly bruised knee-cap and for a while the chief executive of the A. V. M. A. was going around with the aid of crutches and a cane. A letter recently received brought the information that Dr. Sigler was up in the northern part of Indiana, operating upon some patients, which may be taken to mean that his knee is getting in shape again. He has our best wishes for a prompt and complete recovery.

APPLICATIONS FOR MEMBERSHIP

(See April, 1927, JOURNAL)

FIRST LISTING

- BRUECKNER, ARTHUR LOUIS** 5643 Belmar Terrace, Philadelphia, Pa.
V. M. D., University of Pennsylvania, 1924
Vouchers: G. A. Dick and E. L. Stubbs.
- DAVIS, OSCAR GOLD** Roxboro, N. C.
D. V. M., U. S. College of Veterinary Surgeons, 1923
Vouchers: A. A. Husman and Wm. Moore.
- DAWSON, BERT L.** 320 Agricultural Bldg., Raleigh, N. C.
D. V. M., Kansas City Veterinary College, 1914
Vouchers: Wm. Moore and W. C. Dendinger.
- DILLAHUNT, PETER A.** Springfield, Ohio
V. S., Ontario Veterinary College, 1893
Vouchers: Leonard W. Goss and Russell E. Rebrassier.
- EVERETT, ED.** Box 384, Raleigh, N. C.
D. V. M., Alabama Polytechnic Institute, 1922
Vouchers: Wm. Moore and W. C. Dendinger.
- HALL, WALTER J.** 642 C St. N. E., Washington, D. C.
D. V. M., Cornell University, 1921
Vouchers: E. C. Schroeder and W. E. Cotton.
- HEIM, THOMAS BRUMBAUGH** 81 E. College St., Alliance, Ohio.
D. V. M., Ohio University, 1926
Vouchers: Leonard W. Goss and Russell E. Rebrassier.
- JUNOD, FRED L.** N. Court St., Athens, Ohio
D. V. M., Ohio State University, 1919
Vouchers: Alvin B. Bingham and Leonard W. Goss.
- LEWIS, IRVIN T.** Box 1305, Charlotte, N. C.
D. V. M., Kansas City Veterinary College, 1917
Vouchers: A. A. Husman and Wm. Moore.

- LONGACRE, WILLIAM S.** 208 N. 3rd St., Lehighton, Pa.
V. S., Ontario Veterinary College, 1896
Vouchers: Sherman Ames and T. E. Munce.
- MICHELS, CHARLES B.** 18a N. 31st St., Belleville, Ill.
D. V. M., Chicago Veterinary College, 1917
Vouchers: Herman C. Rinehart and W. H. Welch.
- MITCHAM, REASE** 840 S. Washington Ave., El Dorado, Ark.
D. V. M., St. Joseph Veterinary College, 1923
Vouchers: H. W. Wilson and R. W. Williams.
- NATHAN, SIMEON AARON** Chapel Hill, N. C.
D. V. M., Kansas City Veterinary College, 1916
Vouchers: Win. Moore and W. C. Dendinger.
- NICKEL, WILLIAM CALVIN** 166 S. Main St., Nazareth, Pa.
V. M. D., University of Pennsylvania, 1916
Vouchers: Sherman Ames and T. E. Munce.
- REED, JACOB O.** 812 Washington St., Allentown, Pa.
V. S., Ontario Veterinary College, 1896
Vouchers: Sherman Ames and T. E. Munce.
- SHELLY, JOHN J.** 1316 Easton Ave., Bethlehem, Pa.
V. M. D., University of Pennsylvania, 1920
Vouchers: Sherman Ames and T. E. Munce.

Applications Pending

SECOND LISTING

- Amadon, Roger S., School of Vet. Med., Univ. of Penn., Philadelphia, Pa.
Cunningham, John Robert, Summerside, P. E. I.
Dietrich, LeRoy E., 828 Porter Ave., Wichita, Kans.
Durr, Eddie Harry, 320 Agricultural Bldg., Raleigh, N. C.
Foley, Oda Franklin, Bridgewater, Va.
Henley, Claude A., 232 S. East St., Jacksonville, Ill.
Kixmiller, John L., 305 High St., Logansport, Ind.
Long, Charles Earl, Blue Mound, Kans.
Musselman, George W., Vandalia Ave., Denver, Ind.
Sanders, Claude C., 2134 Broadway, Indianapolis, Ind.
Spaeth, Ernest P., Gillette, Wyo.
Starkey, Jay Ralph, Goshen, N. Y.
Thomas, William H., R. F. D. No. 3, St. Joseph, Mo.
Turner, Robert C., 17½ S. Orange Ave., Orlando, Fla.
Wells, John Raymond, City Health Office, West Palm Beach, Fla.

REINSTATED

- Murray, F. E., 326 Federal Bldg., Salt Lake City, Utah.
Smith, Lester R., c/o Norden Labs., Commerce Bldg., Sioux City, Iowa.

The amount that shall accompany an application filed this month is \$8.33, which covers membership fee and dues to January 1, 1928, including subscription to the JOURNAL.

COMING VETERINARY MEETINGS

- New York City, Veterinary Medical Association of. Academy of Medicine, 5th Ave. & 103rd St., New York, N. Y. May 4, 1927. Dr. C. P. Zepp, Secretary, 128 W. 53rd St., New York, N. Y.
- Connecticut Veterinary Medical Association. New Haven, Conn. May 4, 1927. Dr. Geo. E. Corwin, Secretary, 11 Warrenton Ave., Hartford, Conn.

- Southeastern Michigan Veterinary Medical Association. Detroit, Mich. May 11, 1927. Dr. H. Preston Hoskins, Secretary, 716 Book Bldg., Detroit, Mich.
- Southwestern Michigan Veterinary Medical Association. Kalamazoo, Mich. May 12, 1927. Dr. John A. Schaefer, Secretary, Bangor, Mich.
- Kansas City Association of Veterinarians. New Baltimore Hotel, Kansas City, Mo. May 17, 1927. Dr. J. D. Ray, Secretary, 400 New Centre Bldg., Kansas City, Mo.
- Central Michigan Veterinary Medical Association. Jackson, Mich. May 25, 1927. Dr. W. N. Armstrong, Secretary, Concord, Mich.
- Keystone Veterinary Medical Association. Philadelphia, Pa. May 25, 1927. Dr. C. S. Rockwell, Secretary, 5128 Chestnut St., Philadelphia, Pa.
- California State Veterinary Medical Association. Sacramento, Calif. June 13-14-15, 1927. Dr. E. H. Barger, Secretary, University Farm, Davis, Calif.
- Texas A. & M. College Short Course for Veterinarians and State Veterinary Medical Association of Texas. College Station, Texas. June 13-14-15-16-17-18, 1927. Dr. D. Pearce, Secretary, Leonard, Texas.
- Eastern States Tuberculosis Eradication Conference. Hotel Chelsea, Atlantic City, N. J. June 20-21-22, 1927.
- New Jersey Veterinary Medical Association of. Hotel Chelsea, Atlantic City, N. J. June 20-21-22, 1927. Dr. G. P. Ellice, Secretary, Rutherford, N. J.
- Lake States Tuberculosis Eradication Conference. Olds Hotel, Lansing, Mich. June 27-28, 1927.
- Michigan State Veterinary Medical Association. Michigan State College, East Lansing, Mich. June 28-29, 1927. Dr. E. K. Sales, Secretary, 535 Forest St., East Lansing, Mich.
- New York State Veterinary Medical Society. Watertown, N. Y. June 28-29-30, 1927. Dr. C. E. Hayden, Secretary, 110 Irving Place, Ithaca, N. Y.
- North Carolina State Veterinary Medical Association. Durham, N. C. June 29-30, 1927. Dr. W. T. Scarborough, Secretary, 320 S. Blount St., Raleigh, N. C.
- American Veterinary Medical Association. Bellevue-Stratford Hotel, Philadelphia, Pa. Sept. 13-14-15-16, 1927. Dr. H. Preston Hoskins, Secretary, 716 Book Bldg., Detroit, Mich.

RESTRAINT AND MEDICATION OF SMALL ANIMALS*

By W. G. BROCK, Dallas, Texas

The Dog

The subject of restraint and medication in small animals is one with which all veterinarians are quite familiar and it is my intention to take up only a few of the practical things that are omitted by most of us in our daily practice.

By the term restraint we mean the methods or ways by which we handle or hold the animal for the purpose of examination, operation or medication. The most essential thing in handling small animals is to gain the confidence of our patient. This can be done very easily in the majority of cases by having the owner place the patient on the table for examination and, during the time that you are obtaining the history of the case, approach the patient very cautiously, place one hand near the animal so that he may smell of it, and then gently stroke him on the head or body for a few minutes.

After you have gained the confidence of the animal, you should not be too quick in your movements around him, for this will very often get him excited. In some cases it is very necessary to ask the owner to stand where the patient can not see him, for the animal often looks to the owner for protection, and will put up a brave fight as long as he knows that his master is present. But when the patient finds that he is alone, he becomes frightened and readily submits to an examination.

For the purpose of carrying or handling a dog, it is advisable first to pet the animal for a few minutes and satisfy yourself whether it will be necessary to muzzle him or not. In case you find it necessary to muzzle him, it is best done by simply taking a piece of bandage, making a single loop and placing it over his nose, with the tie underneath his jaw. Pull it tight, bringing the two ends of the bandage back over his head, and tie them there. However, you will find that you can handle or carry the majority of dogs by simply petting them a few minutes to gain their confidence. Then place the animal on your right, put your arm around the dog's body, take hold of his left front leg above the carpal joint, bring the animal close up to your body and let him rest on your hip. Then place your left hand on his head in order

*Presented at the sixty-third annual meeting of the American Veterinary Medical Association, Lexington, Kentucky, August 17-20, 1926.

to attract his attention by petting him. This is done also to protect yourself, in case he should make an attempt to bite you.

Then the animal is placed on the table for examination. This should be conducted in a systematic manner, by examining the eyes, ears, mouth, throat, thorax, abdomen, limbs, vagina (in females) and rectum, and taking the temperature, noting the respirations, etc. This can be done in the natural position, without any restraint, by simply gaining the animal's confidence. Sometimes, on examination of the mouth and throat, it is advisable to use a mouth speculum which can be made very easily out

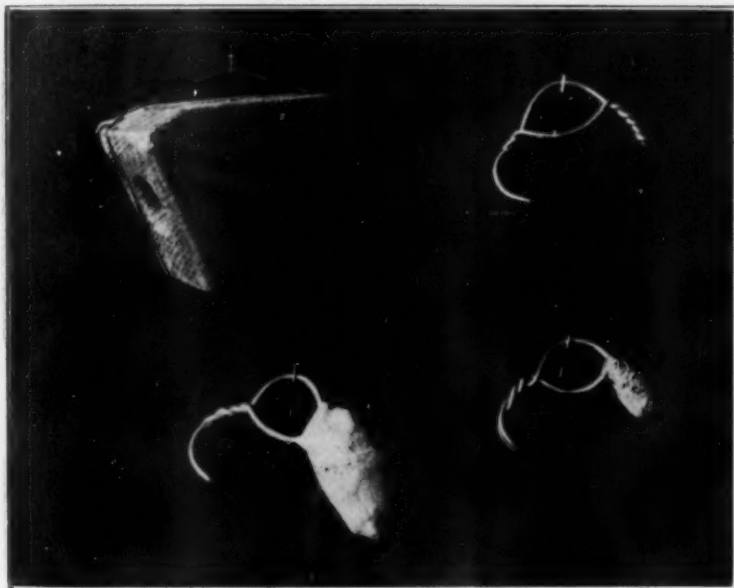


FIG. 1. Mouth speculums. Wood-block (upper left) and speculum made from wire and vulcanizing rubber.

of a block of wood, a piece of wire and a piece of vulcanizing rubber (figure 1). In the examination of the vagina and rectum, it is very often necessary to restrain the animal on the operating-table in the abdominal position. Occasionally you will find an animal that will not lie still on the table for an examination and it becomes necessary to hold him. This can be done very easily by having your assistant hold both hind legs in one hand and the front legs in the other and then press down with one elbow on his neck and the other on his hips.

For the purpose of operations, administering anesthetics, etc., it is best to restrain your animal on the operating-table with a

chrome leather with a small spring-snap. This leather is very soft and pliable, and will not harden or get stiff after being wet. After this is placed on the animal's legs, it is snapped into a ring on a piece of sash-cord, with a French snap on the other end to attach to the table. This hobble can be adjusted for either the dog or cat.

MEDICATION OF THE DOG

As a matter of fact, I have nothing out of the ordinary to show or tell you under the heading of medication of the dog. My intentions are simply to call your attention to some of the ways of medication, which are absolutely neglected by the majority of veterinarians, and which I think are very essential in obtaining the best results for your patients. Medication may be divided into the following for convenience: Peroral, hypodermatic, intra-

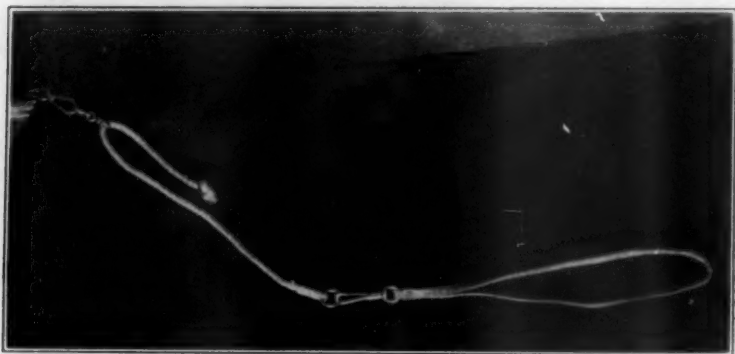


FIG. 2. Hobbles made from split chrome leather, with small spring-snap.

venous and per rectum. The first two, peroral and hypodermatic, are very well understood by all veterinarians. Therefore, I will mention only those two, with this exception: When you give a dog a hypodermatic injection of rabies vaccine, for example, it is advisable to tickle him in the ribs on the side opposite to the point of injection. This will divide his attention and, consequently, he will not object so much to the pain that is produced by the hypodermatic injection.

Intravenous injections are best made into the saphena vein in front of the gastrocnemius tendon, by simply placing the patient on the operating-table in the lateral position. After shaving the hair and using all necessary sanitary precautions, have your assistant put a little pressure on the vein with the thumb and index finger. After the vein is distended, make your injection

pair of hobbles, which can be made very easily (figure 2). The part that you place around the animals' legs is made out of split with the hypodermic needle on the syringe in which you have your medicine for injection, and when the blood starts to flow into the syringe you will know that you are in the vein. Then inject the contents very slowly.

HYPODERMOCLYSIS

Intravenous injections of saline infusions are very often used in severe hemorrhage, to fill up the vessels and to restore vascular tension, since danger is imminent, not from the loss of blood corpuscles, but from lack of a circulating medium. It is also used successfully in septicemia, uremia, toxemias resulting from acute infectious disorders, etc. Intravenous infusions should be made very slowly, about two ounces in about fifteen minutes, and at a temperature of about 103 to 105° F.

ENTEROCLYSIS

The rectal injection of a normal salt solution is indicated in grave hemorrhage, following shocks, injuries, operations, suppression of urine, severe diarrhea, hemoglobinemia, toxemia, etc. This method may be applied in cases not so urgent as to demand intravenous saline infusion, or hypodermoclysis. It is best given by taking a quart or half-gallon irrigating-can, or rubber fountain-syringe, placing a Meinecke drop-attachment about one foot from the irrigating-can, and then using about three feet of rubber tubing with a regular human rubber catheter on the end to insert into the rectum (figure 3). Place your patient in a comfortable position on the table, or in some place where you can have the owner, or your assistant, spend about an hour or so giving the saline infusion. It should be given at a temperature of about 105° F. and not faster than one ounce every ten minutes.

I want to call your attention also to the proper method of passing a catheter for the purpose of medication. In the male dog you place your patient in the left lateral position on the table, with his legs in their natural position. Grasp the penis with the left hand, pushing it forward beyond the prepuce and then direct the end of the penis backward. In this position the prepuce is out of your way, at the posterior end of the os penis, back of the bulbous glands. Now take the penis in the left hand, using the right to manipulate the catheter. It is always best to use a regular human catheter (number 8 or 10) with a

wire stilet. See that the rubber catheter is about one inch **longer** than the stilet. Insert the rubber catheter with the wire **stilet** into the urethra. After passing it about one inch or **so**, you will have a little difficulty in getting the catheter started **into**



FIG. 3. Irrigating can with attachments for enteroclysis.

the urethral groove of the os penis. After passing this point you will meet with another obstacle, when your catheter **reaches** the prostate. At this point it is advisable to withdraw the wire stilet about two inches and then pass the catheter further for-

ward. This may be repeated, if necessary, in order to drain the bladder.

Passing the catheter in the female is not so difficult, but it is necessary that you use a speculum. You may use a regular female metal catheter or you may use the rubber one, with the wire stilet, the same as you would in the male.

The Cat

The majority of veterinarians have neglected, or wilfully avoided, feline practice on account of not understanding the proper methods of restraint, medication, and the susceptibility of drugs, which will cause them a lot of grief. However, if you



FIG. 4. Proper method of using mouth speculum on cat.

understand the animal and can gain its confidence, the method of restraint and medication is very simple.

I have found by experience that the simplest and easiest way to carry a cat is to take him by the back of the neck with your left hand, grasping the hind legs and supporting the weight of the animal in the right. This will not endanger yourself, neither will it hurt the animal, and by handling the cat very gently in this manner it is not repulsive to the owner.

We find that the proper way to restrain the cat for the majority of operations is to put him on the table, using the same hobbles that you would on a dog. However, for the purpose of medication, it is not necessary to restrain the animal, as a cat always

fighting restraint, which leaves a very bad impression with the owner.

General examination of the cat is best made by placing it on the table. Make your examination during the time that you are gaining its confidence, by gently rubbing it on the back. The examination of the mouth can be done, in the majority of cases, by simply opening his mouth and pressing the cheeks between his teeth, thus holding the mouth open for a few seconds. However, in some instances it is advisable and becomes necessary to use a mouth speculum (figure 1), which is made out of an ordinary piece of galvanized wire. By using vulcanizing rubber over the wire, it will not injure the teeth or mouth.

Have your assistant hold the cat's front legs with the left hand and the hind legs with the right. Place the speculum on the index finger of your left hand. Then grasp the cat around the head with your hand and at the same time place the speculum in his mouth (figure 4). In this position the cat is harmless and you have your right hand free for examination, medication, etc.

Examination and treatment of the cat's ears are best done without restraint, by having your assistant hold the front and hind legs of the animal on the side that you are treating, to avoid being scratched. They very rarely attempt to bite. The medication of a cat in the form of pills is very easily done by simply opening the mouth and pressing the cheek between the teeth. With the left hand drop the pill in the mouth and push it over the back of the tongue with the index finger of the right hand. This must be done very rapidly, so that the cat will not have time to scratch you. However, the biggest problem of the veterinarian has always been to give a cat medicine in the form of a liquid, in such manner that it will not strangle the animal and in an intelligent way that will satisfy your client. We find that this can be accomplished very easily by one of two methods.

The first is by using a 2-dram homeopathic vial (figure 5). Have your assistant hold the cat's feet. Place the vial containing the medicine in its mouth, back of the canine teeth, and hold the mouth closed tightly on the vial with the left hand. Then elevate the head slightly, so that the liquid can run into the mouth slowly. However, you can use this method only when you have to give medicine that does not taste bad, and in small doses.

For giving oil and similar liquids use the second method, which is done with a dose syringe, made up by using a regular human rubber catheter (number 16 or 18) and connected to a one-ounce rubber bulb with a piece of glass tubing (figure 5). If your patient is not of a wild or nervous disposition, you can give it the medicine without the aid of your assistant, by simply drawing the

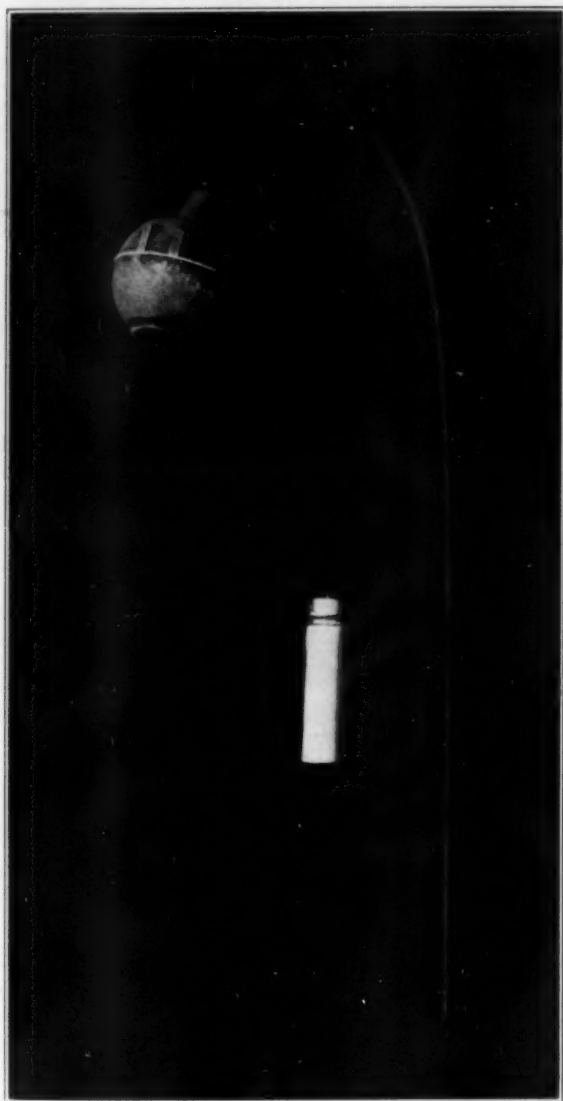


FIG. 5. Cat dose-syringe and 2-dram homeopathic vial.

medicine up into the bulb of your dose-syringe. Place the cat on the table and open its mouth, as previously described, with the left hand. Take the bulb of the dose-syringe in the palm of the right hand, using the fingers to pass the rubber catheter into the mouth and down the esophagus to the stomach, which is very easily done without any danger of entering the trachea. As soon as you reach the stomach, squeeze the bulb and expel the contents directly into the stomach. In some instances where the animal is nervous and very easily excited, it is advisable to



FIG. 6. Method of using the dose-syringe with the mouth speculum (cat).

have your assistant hold the feet and use the speculum, as previously described in the examination of the mouth.

Figure 6 shows the method of using the dose-syringe with the mouth speculum. This method of dosing the cat and small puppies, with oil, Epsom salt, etc., is very safe and after you have used it for a while you will not use any other method. This is something clients can not do, and after they have seen you give medicine in this manner, they realize that it becomes necessary to take their cat to the veterinarian for medication, as all their efforts to give medicine have been very unsatisfactory.

DIAGNOSIS AND TREATMENT OF SKIN DISEASES*

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There are so many diseases of the skin that it is impossible, of course, to discuss all of them in a single paper or at a single setting. On this account I have limited this paper to a discussion of those diseases most often seen in everyday practice. I have purposely omitted, as far as possible, any discussion of the etiology and pathology of the diseases.

ECZEMA

Eczema is an acute, subacute or chronic catarrhal inflammation of the superficial layers of the skin. In the early stages it is characterized by the appearance of erythema, papules, vesicles or pustules, or a combination of these lesions, and is accompanied by a variable amount of thickening, terminating either in discharge, with the formation of crusts, or desquamation.

The disease may go through all the different stages or heal in any one of them, or it may start in any primary form and change to the secondary forms, such as eczema squamosa, and eczema rubrum et madidans. Frequently the type is mixed, so that clinically we rarely encounter a pure type, except in the erythematous form. The inflammatory process may be acute, subacute or chronic, but these terms are somewhat misleading or confusing in this disease, because they are used to describe the duration or course. In most instances we can say that eczema is a chronic disease, but the grade of inflammation may be acute, subacute or chronic.

The primary varieties are so named because the eruption is made of one type of lesion or a preponderance of it. They are:

Eczema erythematosum: In this case the skin is intensely reddened, the reddening being seen on the unpigmented parts, or the color is as a bluish-gray or bluish-red discoloration on the pigmented spots. A superficial serous exudate may take place and the skin become thickened, dry and scaly. The disease may heal in this stage or progress to the next, or papular eczema, in which case nodules of various sizes form on the reddened skin. If these papules become blisters or vesicles, the lesion is spoken of as vesicular eczema or eczema vesiculosum.

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When the blisters or bullae contain pus, the type is known as pustular eczema. In many instance it is impossible to determine the primary form, since there may be more or less diffuse areas in which the skin is covered with matted hair and a nasty exudate. Beneath, the skin is badly congested or yellowish and tender. This is called eczema madidans et rubrum and is due usually to scratching and rupturing of vesicles and not pustules. When the exudate dries spontaneously or under treatment the lesion is covered by a scab or crust and is then eczema crustosum. Eczema squamosa is a common secondary variety following the erythematous or papular types.

Eczema is also classed as to location but this seems unimportant. We also have to deal with acute diffuse eczema of the long-haired parts and circumscribed eczema occurring on different parts of the body.

Acute diffuse eczema: This type is often seen back of the ears, on the neck and shoulders, and back of the thighs. It begins as small circumscribed spots that spread rapidly until large areas are involved. When seen early, the eruption takes the form of roundish, sharply-defined, shiny, orange, yellow or red spots, surrounded by papules and vesicles within an outer, darker-red ring. In the later stages it may consist of a raw surface, with broken-off or matted hair covered with a grayish or yellowish exudate. On the newer parts of the lesion, that is, toward the periphery, one will find the hair broken off and the skin cracked and covered with serum or pus. The lesion is very sensitive and itchy and is consequently altered by the animal licking or scratching it.

Acute diffuse eczema occurs less frequently on the thin-haired parts, yet we have frequently seen it on the side of the face.

Circumscribed eczema shows little inclination to spread and occurs on parts of the body more liable to mechanical injury, dirt, lice, fleas, etc. It may take an acute course but is more often chronic in nature. On the scrotum we have most often observed it as an acute disease. Circumscribed eczema often occurs on the back, especially in old fat animals. The hair becomes thin or broken off and the skin is unevenly thickened or thrown into folds and may be moist, although in most cases it is scaly (squamous eczema). Itching is intense and persistent. When the tip of the tail is involved an ulcer may result. One

of the most common forms of circumscribed eczema is that of the external auditory canal—non-parasitic otorrhea.

DIAGNOSIS

The diagnosis of eczema in the dog is not always easy and yet there are certain characteristics that are common to most all cases and at least suggestive. In the first place eczema is probably the most frequent skin disease encountered and if a guess has to be made, it should be made in the direction of the greatest possibility. In eczema the skin is reddened and more or less thickened. The eruption is mixed in character. There is scaling or crusting, and a tendency for the disease to attack the tough or thick-skinned parts.

DIFFERENTIAL DIAGNOSIS

Many diseases might be considered in a differential diagnosis, but those most often concerned are the different varieties of mange, sarcoptic, follicular and otodectic, and ringworm.

Sarcoptic mange: Sarcoptic mange is not localized in a region or two, as is usually the case with eczema, but instead the lesions are scattered and quite quickly. Scabies can not remain localized long and spreads rapidly.

This disease shows a predilection for the tender parts of the body, as inside the legs, the under side of the neck and lower abdomen, whence it spreads to other parts of the body. Itching is intense, especially if the animal is warm and it is way out of proportion to the amount of skin lesion. If one looks closely at the eruption of a fairly new case of sarcoptic mange, he will notice little pin-point hemorrhages in the center of the papules, and occasionally, but not often, be able to see the burrows in the skin. Finally, a microscopic examination of scrapings may clear up the diagnosis. In some cases, the parasites can be demonstrated; in others, their ova; and sometimes it is not easy to find anything and the diagnosis has to be made upon the clinical examination and especially upon the itching and the history of contagion.

Follicular mange. This disease exists in two forms, the pustular and squamous varieties or types, or they may be mixed, or the squamous may follow the pustular.

The pustular type begins with hard firm nodules followed by pustules, which contain a dark-red, viscid fluid, usually beginning upon the thin-skinned parts and then quite rapidly spreading to

other parts. To be more specific, the favorite sites appear to be the under side of the neck, inside of fore and rear legs, and lower abdomen. The skin is wrinkled, thrown into folds and the dog gives off a very foul odor, which is almost diagnostic. The skin becomes what is described as "copper-red" in color. The animal is little out of sorts, and not very itchy. This lack of pruritus is a fairly accurate method of distinguishing between sarcoptic and follicular mange. The pus, if examined under a low-power lens, will show almost any number of parasites.

Squamous type: This is really a squamous eczema, due to the *Demodex folliculorum*. It appears first as a rather insignificant benign disease, in which areas of baldness appear upon different parts of the body. Favorite seats are the orbits, around the lips, inside of the elbows, lower part of neck and abdomen, or scattered in isolated spots well distributed over the body. The skin is at first usually of a copper-red color and is covered with fine scales but later is lead gray. In other instances there is simply a loss of hair. The skin appears in fine condition and the lesion so benign in appearance that one hesitates to diagnose follicular mange, and yet these thin-haired and bald spots, without much reaction, are generally this type of mange. We have found this statement so true that we now incriminate the parasite until we can prove otherwise. Itching is of little importance.

Ringworm: This disease is diagnosed by the circular-shaped loss of hair, extending outward, the widely dispersed eruption, scurfy deposit, sharply defined spots with but little pruritus and by its contagiousness, as it often is communicated to people.

TREATMENT

The treatment of eczema is both internal or general and external or local.

General treatment: Each case must be inquired into to determine if possible what might be the cause of the trouble, since every case is different from most every other one. The diet should be checked over. There are few foods that induce the disease directly but there may be some which, on account of their indigestibility, may prove factors. In general terms the diet should be nutritious but not fancy. Pork, salted meats, pastries and highly spiced foods should be prohibited. In most cases a meat diet will prove useful, or meat and milk, although some animals do not do well on these alone. Beef, mutton and lamb are good. Idiosyncrasies must be taken into consideration.

The animals should have plenty of exercise in the air and sun. In our experience we have had our attention called to the improvement of the chronic cases, when placed on a farm, and it has been reported to us that the ultraviolet light is most useful in such cases. The bowels should be kept regular with a saline, cascara, or mineral oil.

So far as medicine is concerned the selection must be based upon the results of the examination of each case. So far as I know there are no specifics for the disease. Arsenic was at one time in good repute as an all-round remedy but it is a cutaneous stimulant and contraindicated in acute or subacute cases, in which it may do more harm than good. It is most valuable in the chronic or at least sluggish varieties of the disorder. In many instances no grounds can be found for internal treatment other than regulating the bowels and in such instances we have to rely upon external treatment alone.

External treatment: This must be resorted to in every case and in many is sufficient to effect a cure or at least to cure the present attack. While there are no formulae useful in every case, certain principles based upon the appearance of the lesion are useful. The skin should be kept clean of the products of the disease, crusts and scabs. As a rule acute or subacute cases do not react well to water and especially to soap and water. In such cases, boric acid solution is a better cleanser, or wiping the surface carefully with mineral oil, petrolatum, cold cream, etc., will serve the purpose. In chronic cases soap and water and especially a strong soap are useful. Tar and tarry preparations are generally indicated in chronic but not acute eczema, the rule being the more chronic the lesion, the more is tar indicated. Tar and its preparations and substitutes are irritants to the skin and are of course not needed in acute disease, but are often successful in stirring up a sluggish skin in the chronic forms.

The plan of treatment and strength and character of the medicine depend upon the type of the lesion irrespective of its location or duration of the eruption. It is impossible to foretell what the results from a certain treatment will be until it is tried, because skins react so differently to the same drug and some time the same skin will not react twice alike. Finally it is necessary to prevent the animal from licking the medicine off or injure himself by scratching.

Erythematous eczema: This calls for soothing instead of active measures. The parts may be cleansed with boric acid solution, 15 grains to the ounce, and then dusted with a bland powder two or three times a day or the powder may be replaced with a soothing, greasy preparation as zinc oxid ointment or carron oil. Lotions which have a sediment like lotio nigra and flava, either alone or combined with equal parts of lime water, are often valuable. As a rule they are borne better than ointments. It is not necessary to mention other agents that work well.

Moist eczema (eczema madidans): As there is no sharp line of demarcation between the different varieties of this type, we will discuss the treatment in general. Clip off the hair from the affected region and for some distance beyond, remove the exudate and blood with boric acid solution. Use as little water or soap and water as is compatible with cleanliness. This type of disease heals under a scab or, in other words, is first dried up and converted into the crusty form. Therefore the first line of treatment is to clean up, as said, and apply some astringent to dry it up. Ointments do not do well because they do not adhere to the moist surface. Powders which dry up the secretion or agents that coagulate them may then be used. Among the former are the hygroscopic powders, talc, lycopodium, etc., and among the latter, the vegetable astringents, represented by tannic acid, or the mineral ones, such as the lead, silver and zinc salts. Personally we have employed more solutions than powders. One that works well in many instances is a 5 per cent solution of tannic and salicylic acids in alcohol or denatured alcohol. This we daub on, with a little cotton or gauze, a couple of times a day, until a crust forms or oozing ceases. If no benefit is seen after two or three days, we switch to another astringent, as silver nitrate 5 per cent or diluted Goulard's extract.

When the lesion is converted into the crusty form, the scabs or crusts are removed with grease of some sort, most often zinc oxid ointment. This will not remove the scab the first day but if it is well rubbed in, within 24 hours, certain parts of the scabs will be loosened and in two or three days the lesion cleared of them. The entire length of treatment required is in the neighborhood of a week.

Recently I have been informed that equal parts of oil of cade, tincture of soap and alcohol work exceedingly well in such cases but have not had an opportunity to try the mixture. We are

partial to the mixture of the acids, because it works well in our hands and, while irritant, the dogs rarely lick it off.

Chronic eczema (or usually *chronic squamous eczema*): This is the usual old-standing type found on the back. Here stimulating remedies are required to stir up a sluggish skin. Of these, tar in the form of *pix liquida*, or its oil, or oil of cade or *rusci* do well. Sulphur is also useful. There are so many similar formulae containing these ingredients that I hesitate to mention any. Jacob recommends *pix liquida* and alcohol, two parts, and green soap, one part, applied with a moderately stiff brush, once or twice a day, or, where the skin is thickened, 10 to 20 per cent ointment of balsam Peru in lard or in alcoholic solution. We have our own formula which we find useful in these cases and in *sarcoptic mange*:

Sulphur	4 ounces
Oil of tar	4 ounces
Lysol	1 ounce
Salicylic acid	1 ounce
Lysol (or comp. solution of cresol)	1 ounce
Cottonseed oil	2 pints

Sometimes we add a little crude oil.

Sarcoptic mange: In the dog this is not a hard disease to cure. Probably the greatest error made is in not treating the entire body. Many remedies will kill the parasites but should be kept up until the eggs have all hatched or a relapse is almost bound to occur. The preparation of sulphur, tar, etc., mentioned above, does well in these cases as do many that are similar. Other agents are lime and sulphur dip, balsam of Peru in alcohol 10 per cent or 10 per cent each of balsam of Peru and creolin in alcohol. In many cases it is best to cover about one-third of the animal at a treatment and to bathe with a strong alkaline soap at weekly or ten-day intervals. Potassium sulphite solution, and similar sulphur preparations are useful. For dogs that have to stay in the house the alcoholic solutions are much preferred, because they are more cleanly.

In cats, the prognosis is not so good. These animals, for some reason, appear to be able to withstand a great deal of mange until they are shut up and treated and then simply drop out. In some cases this may be due to licking the preparations employed but in others, where nothing but sulphur ointment has been used, this seems improbable as the cause. We are still using with considerable success an ointment made of balsam

of Peru, 25 parts, green soap, 25 parts, and alkaline sulphur ointment, N. F., 100 parts. This is to be applied every other day, rubbed in well. Ten per cent balsam of Peru in alcohol also does well, as does ordinary sulphur ointment in many cases. If the disease is widespread, a dipping in lime-sulphur solution is no doubt the best treatment but in these cases the prognosis is poor as these animals do not take kindly to the baths. Yet there is less danger than coating the entire body with greasy or alcoholic preparations.

Follicular mange: The treatment of this disease is still unsatisfactory, I believe. Some animals appear to do well on one thing and some on another and still others do not react to anything. Some cases, on the other hand, appear to recover without much attempt at treatment. The same remedies used in sarcoptic mange may be used. Nitrate of mercury ointment, 1 part to three of lard or oil, rubbed well into the spots every two or three days, will invariably bring out a cure, in the localized cases. Our recoveries in 113 consecutive cases is 52 per cent and this includes the old generalized cases that were hopeless and some others where we did not think treatment advisable. Tincture of iodine painted on the localized spots for several successive days or until some desquamation occurs or equal parts of tincture of iodine, gasoline and carbon bisulphid, scrubbed with a brush, will be useful in the isolated spots. The latter remedy is very irritating as you all know. Dr. Flynn strongly recommends a solution of formalin, followed by inunction with a mild ointment, such as sulphur ointment.

I do not want to stop without stating that I have just outlined the different treatments. In a paper at this time it is impossible to include all that can be done. To my mind diagnosis is the important thing and when this is made positively, the treatment is not so difficult. Neither will we all get the same results with the same remedies. In quoting our percentages I want to say that our diagnosis of follicular mange is always based upon the microscopic findings. We do not find it a difficult thing to demonstrate the demodex to the owners and find that even when we are satisfied of a diagnosis without the demonstration, the owners are invariably better satisfied if they can see the mites themselves.

DISCUSSION

DR. S. W. HAIGLER: I believe our time is going to be pretty well limited, or should be, to cover all of our subjects this morning and get through with

everything, so I am going to make my discussion of Dr. Milks' paper very short, in order to give you a chance to ask him any questions you see fit.

However, I believe if you would have an opportunity to read his paper, as I have, you would see that he has presented us a very short, concise and practical paper. Now, just a few questions I want to ask him and then I am going to let you ask him whatever you see fit.

Dr. MILKS, in what percentage of the cases of sarcoptic mange are you able to demonstrate the parasite?

Dr. MILKS: I would have to guess. Not over fifty per cent in dogs and I think ninety per cent in cats. In cats you can almost always find the eggs or the parasite.

Dr. HAIGLER: Are pustular and squamous and follicular mange identical? Will one terminate or run into the other?

Dr. MILKS: That is a hard question. Pustular and squamous refer to varieties of follicular mange. I believe that either variety may change to the other.

Dr. HAIGLER: Do you find a case beginning as the squamous type and then running into or complicating the pustular type?

Dr. MILKS: Very frequently.

Dr. HAIGLER: Do you find it possible to demonstrate the parasite in the majority of cases?

Dr. MILKS: It is easy to demonstrate the parasite in follicular mange, but not always in the sarcoptic variety. It seems to be the general opinion that the sarcoptic mite is easy to find and the follicular difficult, but our experience is exactly the opposite. In the pustular type of follicular mange, all that is necessary is to squeeze out a small drop of pus and examine it under the low power of the microscope. In the squamous type, it is best to scrape rather deeply and dissolve or soften the scrapings in a solution of caustic soda or potash.

Dr. HAIGLER: That has been our experience. In follicular mange it is very easy to demonstrate the parasite, but, on the other hand, in sarcoptic mange we have been unable to demonstrate it in anything like fifty per cent of the cases. I want to ask if you consider it inadvisable—I notice you recommend boric acid solution for cleaning up the surface is most eczemas—to use alcoholic solutions.

Dr. MILKS: I do not think it is necessary. You get much more irritation from the alcohol. Boric acid is a very mild preparation and does very well. I just recently ran across an article which recommended boric acid for this purpose.

Dr. J. C. WRIGHT: Do you use mercurochrome on your patients?

Dr. MILKS: No.

Dr. WRIGHT: Dr. Rife and I have tried out mercurochrome in two or four per cent solution. In excessively bad cases we use four, and have obtained better results than with any other remedy. We have a large English bulldog that came in with a skin disease that we diagnosed as sarcoptic mange. We painted him from tail to head and he looked like a ball of red fire. In three days the condition was allayed and he was on the road to recovery. You can put it on daily and it does not poison a dog.

Dr. MILKS: In cases of mange?

Dr. WRIGHT: Sarcoptic mange or eczema, either one. In red mange it does not do any good.

Dr. RIFE: Mercurochrome is not soluble in alcohol. You have to dissolve it in a little water and then add the alcohol.

Dr. C. W. BOWER: I have encountered a type of moist eczema in which there was an intense itching, where the patients would just gnaw themselves to pieces. What treatment would you recommend to stop the itching?

Dr. MILKS: You will have to treat the itchiness in one of two ways. Either apply something that the dog will not lick off or fix his head so that he can not get at it. We have found that most of these cases will get along very well with the preparation I mentioned, that is, five per cent salicylic acid and five per cent tannic acid in alcohol. They rarely lick it off.

Dr. C. A. PLEUGER: What is the effect of diet in producing eczema?

DR. MILKS: We do not have so strong an opinion on that as some people. We check these cases over and, if we can see that they are feeding too much pastry or starchy food, or if we see anything radically wrong with the diet, we change it. Otherwise we leave it alone.

DR. C. R. WALTERS: Can you give us any light on the transmission of follicular mange? Why is it that some dogs readily contract the disease and others do not—dogs apparently in the same physical condition, dogs in the same kennel? There may be one or two cases, the dogs all in close contact with each other, and the others never take it.

DR. MILKS: I do not know why that is. You find that condition, not only with mange but with lice. I remember a case, a few weeks ago, where two dogs were kept in the same house. They played together and lived together. One was as lousy a dog as you ever saw and the other one did not have a louse on it.

DR. J. C. FLYNN: In those cases, which we commonly call summer sores or moist eczema, the dog finds a particular spot on his hip or back or one of the legs and he takes great delight in gnawing and he bites at it until he gets the skin bruised. Then a scab forms there and around that scab water blisters that break and spread into the hair. Thick creamy pus forms there eventually and, if you do not take care of it and trim the hair away and treat it, it spreads pretty rapidly over the body. On fecal examinations, in such cases, do you not quite frequently find the eggs of the whipworm?

DR. MILKS: We have no data as to that.

DR. HAIGLER: In that connection, I would like to mention that Dr. Whipple, of Peoria, Ill., did some work a few years ago. I think he had an article in the JOURNAL. He thought he had effected a cure in a number of cases of this so-called moist eczema that he could not cure otherwise. He told me later that those cases came back again, six months or a year later. There does not seem to be any connection.

DR. J. V. LACROIX: We have been interested in that subject for about eighteen months; that is, the possible relationship between whipworm infestation and dermatitis. We have found that there is such a relationship. In a large number, I do not know that proportion, but in a large number of animals, we find a skin reaction such as Dr. Flynn has described in many cases of whipworm infestation. We have, I think, tabulated records on some twenty-odd cases and in all, with the exception of two, there has been complete recovery following removal of the cecum. I do not mean to say that the cause of all so-called eczemas is a whipworm infestation. Neither do I wish to leave the impression that in whipworm infestations there is always a marked skin affection that looks like eczema, but simply that in many cases of whipworm infestation there is a decided eruption, usually moist, involving a good deal of the body, sometimes causing pruritus, much discomfort and distress, which is relieved by the removal of the cecum. In two of the cases that we have tabulated, the condition recurred. In one I should say it never did recover completely and in the other there was a recurrence. I believe that in all parasitoses—intestinal parasites—we have more or less skin manifestations. I would like to ask Dr. Milks to make the line of distinction, a little bit more clearly than I understood it, between the manifestations of eczema and other skin disturbances that we ordinarily consider non-parasitic. For example, the term eczema is commonly used to denote a non-parasitic dermatitis. We habitually employ that term in talking to our clients because we think they are more apt to understand what we mean. However, I think we go wrong in more ways than one in employing the term eczema in, for instance, such cases as the dermatitis which will follow a mild irritating influence of any sort, such as the clipping of a dog with a dull blade or the application of solutions that are irritating, or anything else, for that matter, that will cause a reaction. I think, in other words, we should get as clearly as possible in our minds the practical difference between that which we are justified in calling eczema and that which is not eczema. And in this connection, it has been our custom for some while to refer to everything that is non-parasitic—I mean everything in the way of dermatitis that is non-parasitic—as a dermatitis, calling such cases eczema only where there is a specific reference to digestive disturbances, usually in subjects that are mature or old, or where the condition

can not be associated with irritating influences that are mechanical or chemical. I think this has a practical application from the point of treatment in that if you attempt to outline a treatment for a condition you call eczema without being pretty careful about the causative agent, you are apt to do much mischief in some instances and certainly prolong an aggravated condition. I wish to ask Dr. Milks to give us his advice on that point.

DR. MILKS: There are a great number of skin diseases and a large number of classifications. I think you are perfectly right, if you know that your irritation is due to some known external influence, to call it a dermatitis, since it is customary to restrict the term dermatitis to acute inflammations the result of known irritations. Eczema really means a boiling out or something coming from within and is often spoken of as a catarrh of the skin. Consequently, when we have an acute inflammation due to a known irritation, it is a dermatitis and not an eczema. Poison-ivy reaction is a good example of a dermatitis. Often we do not know the history and unfortunately have to make the diagnosis entirely from the symptoms and it is not always possible to separate the two diseases. I believe that chronic eczema is more often seen in old dogs, but that the acute varieties are as frequently seen in young ones.

DR. LACROIX: I referred to it in dogs mature or old, seldom in the puppy. Then, if I interpret your reply correctly, there are quite a number of cases of eczema that must, when you do not diagnose eczema on sight, have a pretty full history.

DR. MILKS: Yes, I think skin diseases are like other diseases—you need a good history or else be able to observe the patient for some time and in many instances your diagnosis has to be by elimination, in skin diseases just the same as in other conditions. So far as I can find, there is no sharp line of demarcation between any of these diseases.

DR. F. E. WARD: Do you ever use the old white lotion?

DR. MILKS: That makes a very good astringent.

DR. WARD: I am not a dog man myself; my son does that. These cases do not seem to give us any trouble. We use this common old white lotion. Around the hospital we use a spray to get rid of the fleas and flies. It is in the summer time, of course, that we usually have these conditions. So many of our clients keep these dogs right in the house, where the climate is hotter than you are here. We do not like to use an oily preparation that will soil the furniture and clothes and we use this lead lotion. If it is a fox dog or bird dog or something of that type, we make a lotion that you mentioned here, your oil of tar and with a little bit of turpentine and paraffin oil. We buy that by the barrel. If it is a dog that we do not mind putting the oil on, we use that, but be careful in using oil of tar on a dog or cat. We have cases presented in which Glover's mange cure has been used. If they put that all over a dog or cat, we figure on a funeral, because it certainly is a heart depressor, especially in the cat. They will absorb enough to poison them in no length of time, but with skin diseases outside of follicular mange, we do not have much trouble. In an ordinary case of mange all you need is just old crude oil. That will do the trick and I happen to have a cure. Accidentally one of my fox hounds got out. There is a creosoting plant within one block of our hospital. One of our fox hounds got in this ditch where the creosote drains off and she came in like the fire department. The creosote was burning her. I got oil on her right away and then washed the oil off. The oil dissolved the creosote and stopped the irritation. When I cleaned her up, she did not have any more mange, and she was all right. It was an accidental cure. Of course, a little severe, but ordinarily the old crude oil will turn the trick and one thing about this oily preparation—with your oil of tar and just a slight amount of turpentine with your paraffin oil—the flies will not bother a wound. It will stop the itching as soon as you put it on and, if you want to add a little keorsene to that, that stimulates the growth of hair and it will stop that sweaty condition that you have. We have never had any cases in which we used more than a four- or an eight-ounce bottle, to get rid of the condition. We have all kinds of dogs and from practically every state in the Union. We are on what we call the Cross Roads at Terre Haute, paved roads in every direction, and many dogs belonging to tourists get sick in the neighborhood and we get them.

DR. MILKS: May I ask Dr. Rife or Dr. Wright a question about a disease which they have an opportunity to see that I do not. Do you find an eczema frequently in your filaria cases? We have had only one case of filaria in New York in a long time and this dog came in with a bad case of moist eczema and has had it ever since. Is there any connection?

DR. RIFE: Once in a while, in cases of filaria, you will find a skin disease, but we have to treat it just like you do any other eczema and it generally clears up for a while. Get rid of those embryos in the blood and the condition will get much better right away. The skin disease is not necessarily a symptom.

DR. E. E. PATTERSON: I would like to ask Dr. Milks if he has ever used the quartz light on any of these so-called skin diseases and, if so, what results have been obtained.

DR. MILKS: I have not used it enough to give you a good opinion. We have one case now, a bad pustular condition, that the quartz light seems to do more good than anything else. Dr. McClelland, of Buffalo, has one and is very enthusiastic over it.

HOW ABOUT THIS, DR. BROWNING?

The following syndicated news item was published in dozens of newspapers throughout the country during February:

An American veterinarian, called to treat a sick cow belonging to a dairyman of Honolulu, failed to inspire the confidence of the owner. Ignoring the veterinarian's prescription, the dairyman cut off part of the cow's tail and took it to a Hawaiian priest, who invoked the pagan gods in the animal's behalf. The cow got well.

Nothing is said as to what final disposition was made of the piece of caudal appendage. Was the cow later retailed?

NEWS ITEMS

On April 1, 1927, an ordinance became effective in Aurora, Ill., making compulsory testing of all cattle supplying milk to that city.

The House of Representatives of the Illinois Legislature recently passed the Tice Bill, exempting veterinarians from jury service.

Announcement was made recently that fifty-six counties in Illinois have contracted for approximately 32,000,000 cubic centimeters of anti-hog cholera serum for 1927.

A press report recently was authority for the statement that upwards of 1000 dogs had been destroyed in and around Pittsburgh, in connection with the campaign against rabies in Allegheny County.

It is estimated that considerably more than 1200 cities and towns in different parts of the United States have adopted ordinances requiring the tuberculin test of all cows supplying milk to these municipalities.

SOME STUDIES IN THE BEHAVIOR OF MALIGNANT GROWTHS IN DOGS AND HORSES*

By GEORGE WATSON LITTLE, *New York, N. Y.*

Some years ago it was my good fortune to become associated with a certain institution and laboratory devoted to the study and treatment of malignant new growths. The behavior of these growths in the lower animals, more particularly the dog and horse, was naturally of chief interest to me as a member of the veterinary profession. The major part of my investigations in this much-neglected field was confined to the dog because of my subsequent specialization in canine practice.

In this monograph I shall endeavor to group the various types of carcinomas and sarcomas with special reference to their regional site of origin and their modes of dissemination and metastasis. I shall also draw some conclusions as to the length of time that life is prolonged by operative procedure, by combining radium emanation and operative removal and by the use of radium emanation alone. It has really been my experience in operative procedure which has led me to seek other means of treating malignant growths. When total excision is attempted, for example, there is difficulty in determining the exact outline of the growth, resulting in actually cutting through and leaving behind viable cancer cells which frequently are apparently stimulated to renewed growth activity. Thus, prompt recurrence of the tumor results.

With these considerations in mind and convinced of often unsatisfactory operative procedure, I welcomed the opportunity to collaborate in the study of the effects of radium emanation upon malignant growths, as they appeared in my practice. The knowledge obtained in such study will evaluate this mode of therapy, which, to my knowledge, has never been seriously undertaken before in the history of veterinary science. Finally, it is hoped from such a study to determine the etiological factors underlying the production of cancer in the lower animals, with a view to possible prevention of conditions tending to promote malignant changes.

Before passing on to the discussion of the case reports of dogs and horses treated, it would be well to explain somewhat in

*Presented at the sixty-third annual meeting of the American Veterinary Medical Association, Lexington, Kentucky, August 17-20, 1926.

detail the method by which radium emanation is prepared and the technic of its implantation into the malignant tissues. It was not many years ago that the only method in which radium could be used in human patients consisted in the application of the radium salt itself to the malignant mass. This is still being done and in many cases it is considered advisable to employ it. Physicists found that as the emanation from radium is constant, it could be used instead of the radium itself, by allowing the radiation from the emanation to pass through tiny glass tubes. Special apparatus enabled the sealing of the radium emanation in these tubes which could then be imbedded in living malignant tissue without the necessity of recovering them. Now the radio activity of the emanation contained in these glass tubes can be accurately measured and the length of time that the activity exists in them determined. These glass radium-emanation tubes are called "bare tubes" and their unit of strength or radio-activity measured in milli-curies—the term "curie" being adopted in honor of the discoverer of radium, Madame Curie.

Thus, in our work, we shall refer to the insertion into the tumor mass of several bare tubes, each having a certain radioactive strength at distances of one-half to three-quarters of an inch apart, so that the radiation from each bare tube will overlap its neighbor. By careful insertion of these tubes it is possible to provide irradiation to the whole mass of malignant tissue.

It is interesting to examine more closely these "bare tubes" of radium emanation. Observed with the naked eye the smaller tubes containing 0.5 to 0.9 milli-curies are about the size of a human hair and about one-sixteenth to one-eighth of an inch in length. In the dark these little tubes give off the radium glow or light from the emanation contained in them.

Radium-emanation tubes are inserted into the tissues of the malignant growth in a very simple manner. A medium-size, long hypodermic needle and stilet is used, similar to the common smallest trocar and canula. The "bare tube" is grasped with a small pair of forceps and inserted into the lumen of the pointed end of the canula, the stilet being withdrawn about one-half inch from the end. The entire area around the malignant growth is anesthetized, shaved and cleaned thoroughly, whereupon the sharp-pointed canula is inserted into the malignant tissue at the most desirable points to insure irradiation of the whole tumor mass. It is a very simple operation, entailing no pain to the patient other than the piercing from the hypodermic needle for the in-

sertion of the novocain. In fact, there is no necessity of keeping the dog in the hospital at all, for there is practically no after-care of the patient necessary.

No perceptible change is seen in the malignant growth or in the dog in general for about the first 24 hours. Then the irradiation from the "bare tubes" is evidenced by redness, inflammation and slight pain on palpation of the tumor area. The owner of the animal is advised as to this condition and instructed to bathe the mass with a warm solution of zonite (1:10), once or twice daily, more for the sake of the owner's peace of mind than the necessity for the dog himself.

We usually advise the client to return three weeks from the original insertion of the radium emanation. It is explained that there will be a gradual decomposition or sloughing of the tumor mass during that time. If the malignant mass has already broken through the skin, this sloughing is more noticeable. On the other hand, when the skin is intact, a breaking-down from the irradiation need not be expected for a week or ten days. After the first two or three days there is little pain on palpation and the entire mass seems to be mildly anesthetized from the effect of the radium emanation. The dog begins to lick the mass, if it exists in a region where licking is possible, and performs this service almost from the beginning.

When the dog is examined, three weeks from the insertion of the radium emanation, it is determined whether more radium emanation is necessary. If the sloughing of the tumor mass has isolated the growth from the surrounding healthy tissues, we carefully remove any dead tissue. Sometimes the tumor mass assumes the aspect of a foreign body, in some instances being hard, dense and even calcareous. In such an event it is deemed advisable to remove it by operation again, under novocain. The appearance of the tissue, whether healthy or malignant, beneath the excised area, is our guide as to whether or not more radium emanation should be inserted. In any event, whether second radium-emanation implantation is decided upon or the malignant area simply observed, the owner of the animal is instructed to bring the dog back in two or three weeks.

It must be remembered that any form of radium, the salt or the emanation, does cause irritation and a wound similar to a burn. This wound is regrettably slow in healing, often taking one month, six weeks or two months before evidence of inflammation has entirely disappeared.

From the time the malignant mass is first examined till treatment is ended, we carefully measure the size of the tumor area before and after each insertion of the radium emanation. Photographic records are also taken if deemed interesting. Likewise a specimen is removed for histological examination and diagnosis. (Lantern-slides of some of the photographs made in this manner have been prepared and will be shown at the end of this paper.)

Since November 16, 1920, we have observed and treated 35 cases of malignant growths in dogs and horses. Four of these cases represented horses and the remainder dogs. Many other dogs were observed for malignant growths where the conditions were so far advanced that no treatment of any kind was attempted. As will be shown in the following case reports, the type of malignant growth involved often gave us a definite idea what the prognosis would be. In some instances certain types are found to be permanently destroyed while, in others, growth is only aborted and the animal's life extended, although ultimately terminating fatally.

It will be impossible to cite the case reports of more than a few individuals, for time will not permit, nor would I be able to hold your interest, perhaps, in a subject that may not prove so interesting to you as it does to me.

MYXOSARCOMA

The first case that we found worthy of the time for study and treatment was a male white hound, about four years old and in good general physical condition. This case was first examined, November 16, 1920, with a history stating that within the preceding months two unsuccessful attempts had been made to remove a growth surgically. A solid, indurated tumor mass was apparent upon the superior region of the outer border of the lower jaw, adjacent to the canine tooth alveolus. This mass measured 3 by 3 cm. in diameter and about 2 cm. thick, with a rounded superior surface. The tumor mass was painful to touch, firmly adherent to the underlying structures and slightly necrotic in the center. Previous operative treatments had been followed by prompt recurrence locally. On November 16, a small section of the growth was removed for histological study and gave the diagnosis of myxosarcoma, which was cellular, with considerable vascularity and some leucocytic infiltration.

Shortly afterward, treatment was attempted by the insertion of nine bare tubes, each being placed equidistant from the others

throughout the malignant mass. A week later the lesion was edematous and beginning to ulcerate. On December 1 the tumor showed an extensive slough. On December 4 a single bare tube was placed in the center of a small nodule (1.5 by 1 cm. in diameter) which was apparently a local recurrence at the side of the lesion. On May 20, 1921, the tumor was apparently gone



FIG. 1. Myxosarcoma of lower jaw of dog.

and the area healed over. On October 4, however, the tumor had recurred locally and was 3 by 3 cm. in diameter, after having begun to grow the preceding June, with treatment neglected. On this occasion sixteen bare tubes were placed in the tumor. On November 2, the lesion was 1 cm. in diameter and largely necrotic. The necrotic tissue was removed and thirteen bare

tubes were placed at the base of the tumor. In January, 1922, no traces remained of the tumor and the wound was entirely healed. April, 1924, showed no recurrence and the dog has remained in good condition to date. This case was our first, and proved very obstinate in yielding to treatment, but the final results were satisfactory and gratifying.

NEUROGENIC SARCOMA

You will note, as I proceed, that no attempt is being made to discuss these cases in sequence. On the contrary, I am attempt-

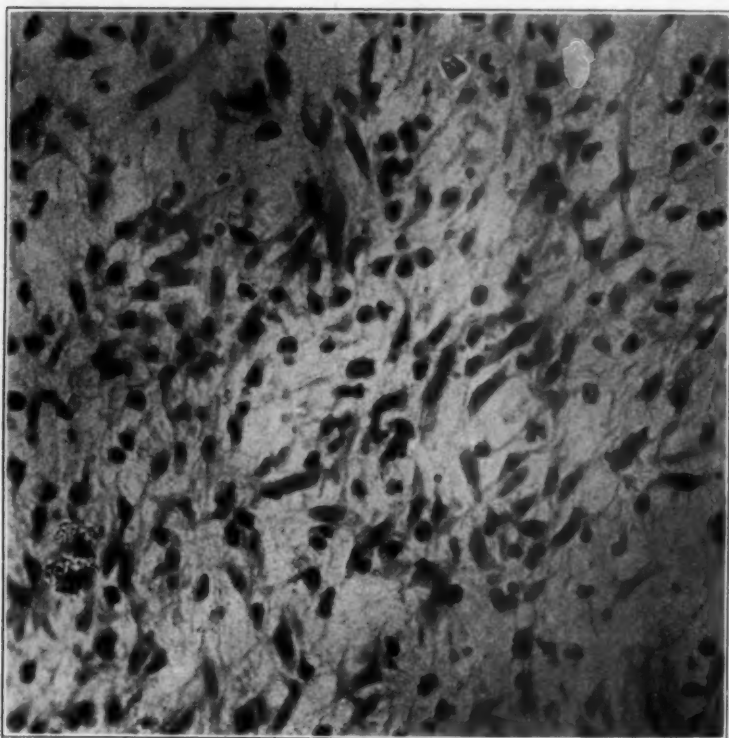


FIG. 2. Photomicrograph of myxosarcoma (dog).

ing to classify them into their respective groups and types of malignant growths. Having begun, therefore, with a myxosarcoma, we will take as our next case a sarcoma of a different type, namely, a neurogenic sarcoma. The animal in this case was a large chestnut-colored horse, between nine and ten years of age. It was first examined on June 14, 1922. A firm tumor, 3 by 4 cm. in diameter and about 1 cm. thick, mainly inferior to, but

also involving the third eyelid of the right eye was found. The growth had smooth, indurated edges and was apparently growing rapidly. The previous history recorded an operation for an attempted local removal of the tumor four months previous to our observation. This attempt at excision was followed by a prompt return of the growth which was again partially excised three weeks previous to June, 1922. On June 14 a small piece of the tumor was removed from which a diagnosis of neurogenic sarcoma was made. On the same date, twenty-four bare tubes were inserted in the tumor. At the next examination, on June 29, 1922, the lesion was reduced 5 mm. in diameter and from 3 to 4 mm. in depth. There was considerable necrosis and apparently still some induration. Five bare tubes were inserted in the limits of the lesion. In September, 1923, when the horse had not been seen for fifteen months, the animal was brought to us, and we found that the tumor had apparently disappeared one year prior to that date. There was no evidence of recurrence. The sight of the eye was unimpaired and the animal was sold as being serviceably sound. No further record of the horse could be obtained.

INFECTIOUS SARCOMA

Several years ago, while engaged in hospital work, I had an opportunity to observe a number of dogs affected with a type of sarcoma which is infectious. This is transmitted, it is supposed, entirely by coition and therefore might be classed as a venereal disease. My first case of this type of sarcoma was observed in a pure-bred English bull bitch, where practically the entire vaginal wall as well as the margins of the vulva were affected with the typical soft, easily-broken-down lesions of infectious sarcoma, or granuloma, as it is sometimes called. These lesions appeared in various stages of development. The older and larger ones resembled mushrooms with short stems and the broad diameter of the cap, sometimes irregular in outline. The younger, on the other hand, were more closely adherent to the vaginal wall, so that palpation by the finger registered only a roughened surface. The old lesions were easily broken down, with slight hemorrhage following. The younger ones were not so easily removed and the smallest ones had not developed to more than a pinhead elevation of the mucous membrane. This bitch was sterile and had been for some time, as demonstrated by attempts and by failure to conceive with sound stud dogs.

It seems that sterility is quite common if not the general rule in these cases. The male dog develops these typical lesions on the penis and transmits the infection to the bitch through coition.

The subject matter on infectious sarcoma in dogs is extremely meagre. The Mayo Foundation, of Rochester, Minn., has done some work on the subject in an effort to produce the disease in colonies of animals for the purpose of further study into the progress, grade of malignancy, and also the variety and site of the lesions. In our own work we have observed the disease in one male common dog, several English bull bitches, one French bull bitch, one Boston bull puppy and one male Scottish terrier. No attempt at treatment, except in one case, was undertaken in any of these lesions, owing to the extensive areas involved and the multiplicity of the lesions. It was a surprise to me to discover one case where a solitary lesion about the size of a pea appeared at the outer margin of the base of the right ear. This was the lesion in the Boston bull puppy. In this case the lesion was definite and well circumscribed, resembling in contour a tiny ball or marble which was excised surgically. The wound healed perfectly and in nine months has not recurred. Histological examination revealed its real nature to be an infectious sarcoma or granuloma. It is apparent from our observations that this type of sarcoma is usually, but not always, infectious through coition, that its growth is relatively rapid, but possessing a medium low grade of malignancy.

Now we come to that great group of malignant neoplasms that appears to be the most common in our animals as well as in the human family. It is this type that every physician, surgeon and veterinarian fears. There are various opinions based upon experience and authority as to the method of procedure to be undertaken in these cases, the efficacy of surgical interference, its effect upon the future behavior of the neoplasm, the efficacy of various methods of radium treatment and the time for its application, and finally the prognosis of the case and the advisability of any treatment being employed. Our efforts, failures and successes in individual cases run the gamut of the means and the extremes.

In one case we are enthusiastic in the results obtained, in another we are absolutely discouraged, resolved never to attempt treatment again. In still other cases our belief that a permanent cure has been accomplished is shattered by an unexpected recurrence and surprising rapidity of growth. In continuing this

discussion, I am still confining myself to the dog and the horse and to actual cases we have observed. Definite conclusions will be drawn which may prove an aid in the prognosis of cases which you may have opportunity to observe and which you may be



FIG. 3. Squamous carcinoma of eyelid of horse (photo taken, Dec. 4, 1920).

requested to state your opinion concerning, as to the advisability of attempting treatment. I hope that I may bring out these conclusions so clearly that they will be indelibly impressed upon your memories as a guide to procedure when confronted with a

problem involving a malignant growth in a valuable dog and where the owner is willing to cooperate in every way to effect a cure, or even prolong the animal's life.

To return to the subject of cases. On December 4, 1920, a large 1500-pound buckskin gelding, between 12 and 13 years of age, was brought to the hospital for treatment. When first examined, a large papillary growth, 2.25 to 4.5 cm. in diameter, was attached to the lower eyelid of the left eye and apparently tightly adherent to the adjacent portion of the cornea. The

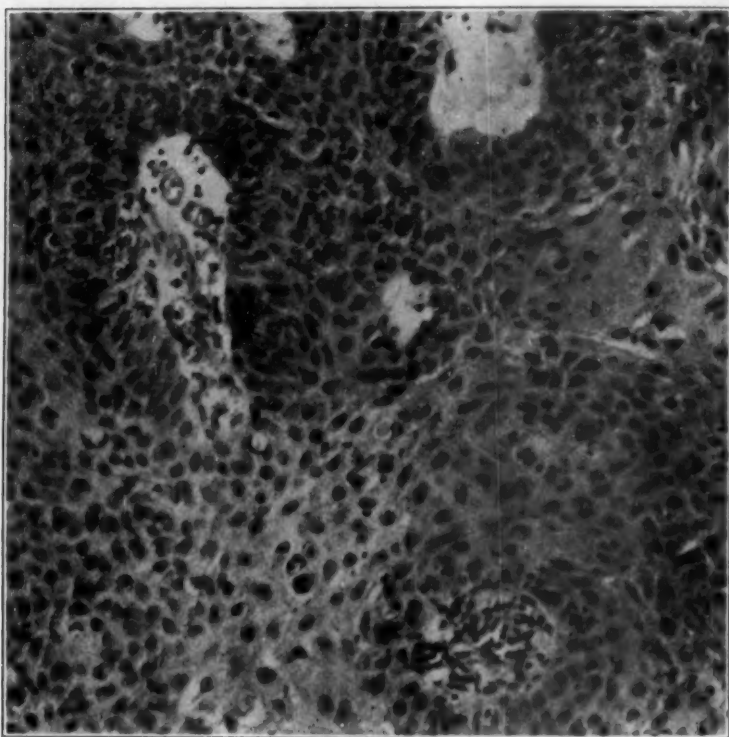


FIG. 4. Photomicrograph of squamous carcinoma (horse).

lower one-third of the eyeball was involved and the tumor was of sufficient bulk to destroy the function of that organ. A dense keratitis involved the entire cornea, so that vision was completely obscured.

On December 4, 1920, this animal was chloroformed and a small section of the tumor was removed. From this a diagnosis of squamous carcinoma was made. At this time nine bare tubes were placed throughout the lesion. On May 20, 1921, the tumor

had entirely disappeared. Also, the vision was completely restored. Up to April, 1924, the eye remained normal and there was no recurrence of the tumor.

ADENOCARCINOMA

Another type of carcinoma was observed in a Boston bull about nine or ten years of age. On December 6, 1924, this case



FIG. 5. Same horse as shown in figure 3, May 20, 1921.

showed a tumor mass involving two inferior mammae of the left side, 2.5 by 4.0 cm. in diameter, and about 2.0 cm. thick. It was firm, slightly adherent to the skin and somewhat lobulated. A

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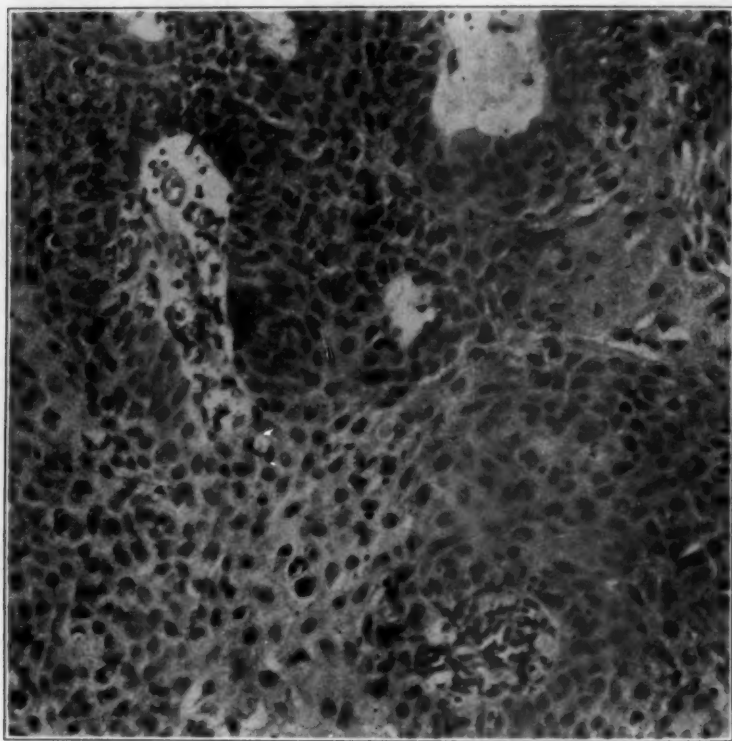


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small portion of the tumor was removed, from which a diagnosis of adenocarcinoma was made.

On December 6, 1921, eighteen bare tubes were placed throughout the tumor mass. January 3, 1922, the tumor was soft and somewhat necrotic. Most of the necrotic tissue was removed, but no radium emanation was inserted. The wound healed promptly and there was no further evidence of the disease. In April, 1923, the animal had a litter of puppies which she nursed.



FIG. 6. Adenocarcinoma of mammary gland of bitch, followed by recovery.

On March 15, 1924, the animal was still well and the affected region appeared normal.

Another low-grade adenocarcinoma of the mammary gland was examined in a small female poodle. The histological specimen was removed and diagnosed, March 10, 1921. On the same date the tumor mass was treated with bare tubes and also on April 4, 1921. On December 6, 1921, and in January, 1922, the dog was examined and the tumor was found to have disappeared completely.

From the beginning of our work in malignant growths, in 1920, to the present date, we have taken considerable care in the selection of our cases for radium-emanation treatment. For the most part we have attempted treatment of these tumors confined to a single focus or area where a definite diagnosis of malignancy was obtained. Also we treated only cases in which we were reasonably certain that metastasis had not yet taken place to the lungs and, in the case of mammary tumors, that no more than one breast was involved. Obviously we could not expect to remove by operation, or by radium-emanation treatment, malignant growths that were distributed throughout several mammae, with any assurance of permanent relief without recurrence. In order to satisfy our curiosity along these lines, to see just what could be done with multiple malignancy of the mammae, we did treat two cases from which we can draw quite definite conclusions, one of which I will cite here.

September 1, 1925, I accepted a 13½-year-old Boston terrier for operation and treatment, involving multiple tumors of the mammary glands. The history for a number of years revealed that subsequent to each oestrus there was decided lactation in all of the breasts and the dog had never been bred. There was a large tumor mass, 4 x 5 cm. in one of the left anterior mammary glands, a smaller tumor mass, 2 x 2 cm. in the opposite right breast and another one, 2.5 x 2.5 cm., posteriorly in the adjacent right breast. The large tumor mass was excised by operation and twelve bare tubes were inserted immediately at the base of the operative field and in the two other tumor masses. On Oct. 15, 1925, radium-emanation treatment was again applied at the base of the removed tumor, as well as to the others. The usual sloughing of the tumor tissue was noted, but by October 19, the growth had recurred at the original site of the operation in the anterior left breast. This seemed to grow with great rapidity and soon reached the size of 3 x 5 x 6 cm. and "fungated" through the skin. This entire mass was again removed and ten bare tubes were placed at the base of the area, whereupon the wound was dressed and left open. On Nov. 25 and 27, more bare tubes were inserted and, Dec. 2, necrotic material was removed. About Dec. 20, 1925, the dog exhibited evidence of acute toxemia, sinking very rapidly, with total loss of desire to move and refusing food. Dec. 21, 1925, this animal was destroyed and we found that the right lung was completely replaced by a large tumor mass. The left lung was covered with large and small tumor

nodules. The liver, kidneys and intestines were normal. A round mass, 5 cm. in diameter, was attached to the spleen. The mammary areas appeared to be in good general condition. The histological examination revealed adenocarcinoma.

In this dog we find an example of rapidly growing malignant growths, developing slowly at first and then suddenly growing with great rapidity in spite of operative and radium-emanation treatment, with a space of $3\frac{1}{2}$ months elapsing from the initial operation to the death of the dog from metastasis to the lungs and spleen.

It is very evident from the history of this case and many others similar to it, that a prognosis in the case of multiple mammary tumors is very grave. Indeed it is advisable to make it quite clear in each case where treatment is undertaken that such treatment is simply for the purpose of prolonging life a little, with no assurance of completely curing the patient at all. If the multiple growths in any individual are remaining dormant without any appreciable increase in the size of the growths, it is better by all means not to interfere by operation or other treatment.

Some of the other histological examinations of malignant growths in dogs, where no treatment was attempted, revealed the following types of malignancy:

1. Female fox terrier, mamary tumor 2.5 x 5.7 cm.—cellular carcinoma.
2. Male adult Airedale—epithelioma of the roof of the mouth.
3. Male collie—epidermoid carcinoma of the left thoracic region, adherent to the skin.
4. Female spaniel—papillary adenochondrocarcinoma of the mammary gland.
5. A large old Airedale—papillary infiltrating epidermoid carcinoma, involving the right tonsilar region, 3 x 3.5 cm. in diameter.
6. An aged common dog—calcified squamous carcinoma, located at the end of the penis.
7. A heavy draught horse—squamous carcinoma of the eyelid. Lesion involved inner border of the eye, but was not attached to the cornea.
8. A heavy draught gelding—very malignant epidermoid carcinoma, involving the right eye and adjacent skin area, 10 x 15 cm. in size.

9. An English setter bitch—multiple nodular tumors of the vaginal wall, thought to have been infectious sarcoma. Histological examination revealed its nature as being a neurosarcoma. Several months later the dog died on the operating-table of another hospital. Autopsy revealed the left ovary enlarged to about the size of an orange, with a tumor mass.
10. Great Dane, eight years old—carcinoma of the bladder wall.

It is evident that the greater number of the malignant growths in canines are revealed by histological examination to fall in that great group of carcinomas where metastasis takes place through the lymph-channels to the lungs principally, the spleen occasionally, and the liver very rarely. The sarcomas, where metastasis takes place through the blood-stream, are not so common and treatment is more apt to be successful.

The favorite sites for the carcinomas appear to be the mammae of the bitch and the membrana nictitans of the horse. The sarcomas appear in bitches and dogs, the infectious variety being transmitted by coition and occasionally by contact to other parts of the body.

There is some evidence that a disturbance in the functional activity of the mammary glands, such as improper drainage of the milk-flow resulting in mastitis, bears a causative relation to the later development of mammary carcinomas. This is frequently noticed in middle-aged or old virgin dogs, where a milk-flow appears approximately two months after the oestral period—a phenomenon occurring in non-pregnant bitches which has never been explained. Sometimes this lactation persists for six weeks to two months.

Finally, it must be remembered that the presence of many nodules, often calcified, would be indicative of a disturbance in the entire mammary gland tissue. The character of these growths is apt to change suddenly from an orderly, slow-growing affair to a very disorderly one, reaching deeply down into the surrounding tissue. Experience in treatment proves to us that operative treatment appears to be successful for a time, the wound healing perfectly, but local recurrence too often resulting. It is also evident that operative procedure stimulates metastasis, due evidently to the failure to remove every vestige of the tumor mass through no definite knowledge of the surgeon as to how deep-rooted the growth may be.

We conclude from our studies that many of the types of malignant growths of dogs and horses do apparently respond more readily to radium-emanation treatment, and with a greater promptness than analogous types of tumors in the human family. In my experience a combination of irradiation treatment with surgery has given in several instances results which would be impossible to obtain by surgery alone. Various limitations of this procedure have been fully described in the body of this paper. The infiltrating true carcinoma in the dog, however, is an exception to this general statement, thereby being analogous in its behavior to the similar type so common in the human family. Efforts to prolong life of dogs have been found just as necessary in many cases as in humans, for, where these animals are dogs to most of us, they are humans to their owners and treated and cared for as such.

It would be exceedingly gratifying to me to have the privilege of adding to my data any fully tested cases of malignant growths in the lower animals giving full credit to the veterinarian in charge. It is hoped that by this means we can build up, from the profession at large, information which will be invaluable to veterinary science. The writer pledges himself to publish this material, in addition to his own, so that all may benefit from it. A case history and a section of the growth in 10 per cent formalin is all that is needed.

DISCUSSION

DR. A. T. KINSLEY: I do not feel competent to discuss Dr. Little's paper. I will attempt to make a few remarks from the viewpoint of a clinician and, not being a clinician myself, particularly in relation to small animal practice, I may miss the point. I will depend on you bringing it back.

In relation to tumors, I will say that I have been very much interested in this particular phase of veterinary practice for a great many years. It is difficult to define a tumor clearly and concisely. We may think of a tumor, from one angle, as being a parasitic growth. From another viewpoint, we may think of it as a mass of tissue, the result of cells multiplying excessively. In other words, a tumor is much like embryonic or matured tissue in which the cells have gone crazy on reproduction. A tumor is a mass of rapidly reproducing cells.

Dr. Little gave you some idea of the frequency of tumors. I looked up some records on the occurrence or prevalence of tumors in domestic animals and offer you this. In the veterinary clinics in the colleges of Berlin, Dresden and Munich, up till 1906, of 86,613 horses 1.3 per cent were affected with tumors. Of 4,972 cattle, 2 per cent were affected with tumors. Of 85,537 dogs, 4.7 per cent were affected with tumors. In a report of the New York State Veterinary College for the year 1922, one-half of one per cent of the horses treated were affected with tumors. (These are approximate figures, you understand, not exact percentages.) In cattle, one-fourth of one per cent. In dogs, three per cent. This will suffice to show you that tumors are apparently much more prevalent in dogs than in other domestic animals. Whether or not this is due to a closer scrutiny of the dog owner, I am unable to state.

I think these figures would be varied, somewhat, in different sections of the country. For example, if you would go into the Southwest and obtain a

classification of the percentage of tumors in cattle you may find in some sections as high as five per cent of cattle affected with a specific type of tumor involving the structures of the eye. I refer to an epithelioma, affecting particularly Hereford cattle, in Arizona, New Mexico, Nevada and Texas, and being the sequel of infectious keratitis.

As to the classification, malignant and non-malignant. The non-malignant, generally speaking, represent the tissues that are adult. Malignant tumors represent the tumors composed of embryonic tissue. Of the embryonic tissue tumors there are two general classes, as outlined by Dr. Little. First, the epithelial new growths, and these can be subdivided into epithelioma, adenoma and carcinoma; the epithelioma, designating that type of tumor in which there is apparently an ingrowth of the tissue from the surface, just the reverse of the wart so far as the mode of development is concerned, and the adenoma, partaking of the tissues similar to those found in gland tissues. As indicated by Dr. Little, another clinical viewpoint that is of very much interest to the clinician is the fact that the malignant epithelial tumors invariably metastasize through the lymph and the surgeon therefore can frequently not only remove the original tumor but the first metastasis in the lymph-gland, if the operation is done early. If it is permitted to go on until it has passed beyond the first group of lymph-glands, operation then is of no avail. The embryonic connective tissue tumors extend through the blood and, generally speaking, are more difficult of a complete cure by surgical methods than are the embryonic epithelial tumors.

Dr. Little discussed a type of growth designated as infectious sarcoma, or infectious venereal disease. Now, I rather doubt whether pathologists actually classify that type of growth as a tumor. I say I doubt that classification. In support of that statement and giving you a little history of the investigations concerning that, Ewing and others made 122 transplants of the so-called infectious sarcoma of dogs and produced or reproduced the disease in thirty-five cases. Twelve cases, in which the reproductive tumor occurred, recovered spontaneously. That is practically 33 $\frac{1}{3}$ per cent. Smith and Washburn also investigated that condition and they drew the following conclusions: "These tumors are infectious round-cell sarcomata." Second, tumors can be transplanted from the genital organs to other tissues in the same dog or in another dog. The tumors, after reaching their maximum growth, may ulcerate and disappear. That is to say, the transplanted tumors. When these transplanted tumors disappear, the dogs are immune thereafter to that particular type of infectious sarcoma.

In 1907 Foster described a spirochete he had isolated from that particular type of tumorous growth and that he claimed to be the cause. In other words, it places that particular type of condition in the dog in a class similar to syphilis in the human. What is the cause of tumors? If tumors are infectious, why is it that surgeons do not frequently become infected, because they are in constant contact with these tumors during operative procedure and examinations? Dr. Nicholson even went so far, in his effort to establish his idea that tumors are not infectious, as to transplant a metastatic tumor from a carcinoma under his skin. Inside of six weeks or two months, the wound had healed and nothing further developed.

I believe, so far as medical literature is concerned, there is only one outstanding case of the apparent transmission of a tumor to the operator and that happened to an assistant of a French surgeon, who was one day aspirating the fluid from a carcinoma and accidentally dropped the syringe after removing it. The needle stuck into the palm of his hand and some of the fluid was introduced. About six months later, I think it was, lymphatic enlargements were noticed along the arm and ultimately the arm was removed. The examination of the tumorous masses revealed a different type of tumor than the one in the patient he was aspirating. From records available, and from experimental evidence, it does not seem probable that tumors are infectious. There is the one exception, of the venereal new growth in dogs, and it was stated that pathologists would not classify that type of new growth as a malignant tumor.

Recently the thought has been suggested that tumors are the result of a vitamin unbalance. Vitamin A, as you know, inhibits growth of tissue and

vitamin B stimulates it. Therefore, it has been suggested that in a tumor there is excessive vitamin B. This may give a cue to the treatment of malignant tumors.

I was very much interested in Dr. Little's discussion relative to the treatment of tumors and, so far as I know, excepting in the very early stage of malignant tumors, where complete removal is possible, the various light rays have been the most successful in controlling or curing malignant tumorous masses.

BUREAU TRANSFERS

Dr. Harry Q. Thompson, from Haverhill, Mass., to Springfield, Mass., on meat inspection.

Dr. Walter J. Hall (K. C. V. C. '13), from Seattle, Wash., to Bethesda, Md.

Dr. Willis V. Ellis (Iowa '09), from Huron, S. D., to Sioux City, Iowa.

Dr. Walter B. Smith, from Charleston, W. Va., to Nashville, Tenn., on meat inspection.

Dr. Ralph E. Nelson, from Lincoln, Nebr., to Augusta, Me., on tuberculosis eradication.

Dr. E. Albert Meyer, from Oklahoma City, Okla., to Denver, Colo., on field inspection.

Dr. Wilbur McPherson (O. S. U. '15), from Jackson, Miss., to Jacksonville, Fla., on tick eradication.

Dr. J. W. Woods (K. C. V. C. '14), from Jacksonville, Fla., to Jackson, Miss., on tick eradication.

Dr. Lewis E. Epple (O. S. U. '08), from Madison, Wis., to Menominee, Mich., in charge of meat inspection.

Dr. Oren A. Christianson (McK. '07), from Menominee, Mich., to Madison, Wis., on meat inspection.

Dr. Sydney Folse (K. C. V. C. '09), from Chicago, Ill., to Boston, Mass., on meat inspection.

Dr. A. A. Kritt (O. S. U. '20), from South St. Paul, Minn., to Boston, Mass., on meat inspection.

Dr. John C. McLeod (Cin. '07), from Cincinnati, Ohio, to Boston, Mass., on meat inspection.

Dr. A. B. Elstun, from Chicago, Ill., to Cincinnati, Ohio, on meat inspection.

Dr. Charles Beverly, from Brooklyn, N. Y., to Chicago, Ill., on meat inspection.

Dr. Ralph A. Parsons (Chi. '17), from Chicago, Ill., to Olympia, Wash., on meat inspection.

Dr. Edward N. Tierney (Chi. '11), from Atlanta, Ga., to Boston, Mass., on meat inspection.

Dr. Otto W. Seher (Colo. '13), from Fort Worth, Texas, to Atlanta, Ga., in charge of meat inspection.

Dr. Alvin F. Staub (McK. '08), from Milwaukee, Wis., to Boston, Mass., in charge of meat inspection.

Dr. Elvon S. Dickey (K. C. V. C. '06), from Sioux Falls, S. D., to Milwaukee, Wis., in charge of meat inspection.

Dr. Clarence J. Young (K. C. V. C. '04), from Omaha, Nebr., to Sioux Falls, S. D., in charge of meat inspection and field inspection.

Dr. Morton Hattery (McK. '07), from Dayton, Ohio, to Chicago, Ill., on meat inspection.

Dr. Joseph S. Wolfram (McK. '18), from Chicago, Ill., to National Stock Yards, Ill., on meat inspection.

Dr. Earl R. Fisher (St. Jos. '23), from Omaha, Nebr., to Boston, Mass., on meat inspection.

STUDIES ON THE TOXICITY OF TETRACHLORETHYLENE, A NEW ANTHELMINTIC*

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Following the recommendation of Hall and Shillinger¹ for the use of tetrachlorethylene (C_2Cl_4), a chlorin compound similar to carbon tetrachlorid (CCl_4), for the removal of hookworms from dogs, one of us (Schlingman)² completed tests on puppies in which it was found that this new anthelmintic was as efficient as carbon tetrachlorid and possessed a greater degree of safety than the latter.

Hall and Shillinger, in their original publication, reported that a therapeutic dose of 0.2 cc per kg. of tetrachlorethylene to a dog without purgation caused degeneration and atrophy of the liver cells involving the greater portion of the lobules.

Sections of the liver of another dog which received a similar amount of tetrachlorethylene showed a marked degeneration of the liver cells which was more advanced than in the previous case, as apparently only a few normal liver cells remained. Similar degenerative changes of the livers of dogs were found by Gardner and his co-workers³ and by Pessoa and Meyer,⁴ following the administration of carbon tetrachlorid.

To determine further the changes produced in the organs of the different species of animals treated with tetrachlorethylene, the clinical effects of which were recently reported,⁵ we undertook an extensive study of the histopathology of the livers, kidneys and spleens of these chickens, cats, foxes, sheep, calves and horses. Included in these histopathological studies were the livers, kidneys and spleens of puppies which were destroyed at varying intervals after they had been given tetrachlorethylene, as well as these organs from puppies which had been treated with carbon tetrachlorid.

When the animals were destroyed, portions of the organs were immediately placed in a 10 per cent formol solution. They were then passed through the routine process of dehydration, paraffin infiltration, cutting and staining with hematoxylin and eosin.

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The anthelmintic was administered alone in gelatin globules. No purgative was given to any of the animals, either before or after treatment. All animals received their usual diet and care while they were under observation.

EFFECT ON CHICKENS

Administration of 1 to 5 cc of tetrachlorethylene to ten chickens, varying from 0.91 to 1.6 kg. in weight, caused no visible toxic symptoms. A repetition of 10 and 15 cc to two birds, which had received 5 cc each four days previously, produced impairment or loss of appetite, dullness and diarrhea. The livers of these latter birds appeared lighter in color than normal and were rather friable. The livers of the other birds had shown only a slight yellowish cast, thought to have been due possibly to fatty infiltration.

Eleven days after dosing with 1 cc of tetrachlorethylene (0.83 cc per kg.) the sections from the liver (fig. 1) of a bird weighing 1.2 kg. showed only a mild degree of fatty infiltration. The kidneys appeared considerably congested. There was also some cloudy swelling in the tubular epithelium. Four days after 1 cc had been given to a 1-kg. bird, sections of the liver showed rather marked edema, and some necrotic cells in which the nuclei stained poorly and appeared as shadows. Nothing abnormal was noted in the sections of the kidneys. A dose of 1.25 cc per kg. (2 cc to a 1.6-kg. bird) at the end of four days had caused no more changes in the liver than in the case of 1 cc per kg. The kidneys, but for a few hyalin casts, appeared normal.

Tetrachlorethylene at the rate of 1.51 cc per kg. (2 cc to 1.32 kg.) produced in four days considerable edema and a moderate degree of necrosis of the liver cells. The kidneys were apparently normal. Fifteen days after 3 cc had been given to a 1.3-kg. bird (2.3 cc per kg.) the liver showed some congestion and cloudy swelling. There was also a diffuse fatty infiltration. Only a mild cloudy swelling of the kidneys was noted.

The liver of a 1-kg. bird, which had received 3 cc of tetrachlorethylene 14 days previously, showed some edema, congestion and moderate reticulation. The nuclei in the reticulated portions appeared pyknotic, the protoplasm staining poorly. The liver cells were diffusely infiltrated with fat. A slight fatty degeneration was seen in the kidneys.

Following a dose of 4 cc to a 0.91-kg. bird (4.39 cc per kg.), the same changes were noted after 14 days, but to a less degree,

as were found in the liver of the bird which had received 3 cc. The kidney presented a moderate fatty degeneration of the epithelial cells with some cloudy swelling. The glomeruli appeared hydropic.

The liver of a 1-kg. bird which had received a dose of 4 cc appeared normal 14 days after the treatment. In the kidney sections only a slight congestion was seen.

A dose of 5 cc of tetrachlorethylene to a 1.12-kg. bird was followed in four days by an additional 10 cc (total of 13.38 cc per kg.). Seven days after the last dose the bird was destroyed. Histologic examination showed a distinct cloudy swelling of the liver cells with edema and congestion throughout. The protoplasm which was slightly reticulated stained very poorly with eosin. No fatty infiltration was present. Some of the nuclei of the liver cells stained dark with hematoxylin but the greater number stained bright with eosin. In the kidneys no pathology other than cloudy swelling of the tubular epithelium and congestion was noted.

Another bird, weighing 1.2 kg., was treated with 5 cc of tetrachlorethylene. Four days later it was given an additional 15 cc, making a total of 16.64 cc per kg. It was destroyed on the seventh day following the last treatment. The histologic changes in the liver (fig. 2) of this bird were similar to those found in the bird which had received an additional dose of 10 cc, but to a greater extent. The kidneys showed severe congestion, edema, extensive cloudy swelling and a few areas of hemorrhage.

The spleens of all these birds showed considerable congestion, irrespective of the dose of tetrachlorethylene given.

As a result of histological studies of the various organs of chickens which had been treated with varying amounts of tetrachlorethylene, it is seen that no injury occurs to the organs following a dose of 0.83 cc per kg. Higher dosage is associated with injury which, however, is not proportional to the increase in amount given. The kidneys manifest little or no injury following doses up to 3 cc per kg. Larger doses seem to produce more severe injury to the kidneys than to the liver.

EFFECT ON CATS

After administration of tetrachlorethylene at the rate of 0.25 cc per kg. to a half-grown cat and to an aged cat, at the

rate of 0.51 cc per kg., no toxic symptoms were noted during the four days they were under observation.

The liver (fig. 3) of the cat which had received the smaller dose showed no pathological changes other than slight congestion and slight cloudy swelling. The kidneys and spleen were congested.

The liver (fig. 4) from the aged cat showed rather marked congestion, some cloudy swelling and mild reticulation. The kidneys showed some cloudy swelling, congestion and a moderate infiltration of fat. Only slight congestion was noted in the spleen. In the region of the straight tubules of the kidneys there was seen a chronic inflammatory condition with considerable fibrosis. The latter changes were probably due to causes other than tetrachlorethylene, since they were too far advanced to have been produced during the four days the animal was under observation.

The dose of 0.25 cc of tetrachlorethylene per kg. produces only slight changes in the organs of cats and can be considered as being safe. On the contrary, a dose of 0.51 cc per kg. seems to produce definite injury and is apparently toxic to the organs.

EFFECT ON FOXES

Tetrachlorethylene to two young but full-grown and to five adult silver black foxes, in doses from 1 cc to 10 cc, produced no clinical symptoms of toxicity during the four to six days the animals were held under observation.

When tetrachlorethylene was given to a fox at the rate of 0.25 cc per kg. (1 cc to 3.86 kg.) or 0.36 cc per kg. (1 cc to 2.72 kg.), no apparent pathology was produced in any of the organs after six days. There were present, however, in the livers of these two, as well as the others, congestion and hemorrhages, due possibly to crushing, since these animals were destroyed by a man standing on the thorax until life was extinct. The kidneys of the fox which had received 0.25 cc per kg. showed extensive chronic pyelonephritis and a few areas of focal fatty infiltration. An increase of dosage to 0.51 cc per kg. (2 cc to 3.86 kg.) was followed in six days after treatment by considerable injury to the organs. The liver cells stained poorly, the nuclei appearing as shadows. The cells were reticulated and swollen. The cells of the kidney tubules appeared reticulated and showed some cloudy swelling. There were no pathological changes noted in the spleen.

A dose of 0.56 cc per kg. (2 cc to 3.75 kg.) after six days caused essentially the same changes which resulted from a dose of 0.51 cc per kg.

Increase of dosage to 1.62 cc per kg. (5 cc to 2.95 kg.) led to increased damage. The liver cells (fig. 5) showed cloudy swelling, fatty degeneration and fatty infiltration, four days after treatment. The kidneys and spleen showed only congestion.

When the dose was increased still more, to 2.94 cc per kg. (10 cc to 3.4 kg.), the same changes of the liver (fig. 6) were noted after four days as had been seen in the preceding case but to a slightly higher degree.

From the study of these various organs, it appears that a therapeutic dose of tetrachlorethylene, i.e., 1 cc to 10 pounds of body weight, or from 0.2 to 0.36 cc per kg., is not injurious and is tolerated exceptionally well by silver black foxes.

EFFECT ON CATTLE

During the seven days the five calves to which tetrachlorethylene had been given in doses of 15 cc to 35 cc were held under observation, no symptoms of toxemia were noted.

The dose of 15 cc to a calf weighing 170 kg. (0.088 cc per kg.) seemed well tolerated. In the liver cells (fig. 7) there was noted only very mild cloudy swelling and reticulation. No changes were noted in the kidneys.

When the dose to an animal of equal weight was increased to 20 cc (0.117 cc per kg.) there was noted but slightly more cloudy swelling and reticulation of the liver cells than in the previous case. The kidneys, however, in this case showed a slight amount of cloudy swelling.

Very few, if any, more changes were noted in the liver and kidneys of the calf which had received 25 cc of tetrachlorethylene (0.14 cc per kg.) than were noted in those organs from the preceding calf. However, when the dose was increased to 30 cc (0.157 cc per kg.) there were seen in the liver cells considerable reticulation, edema and a little more cloudy swelling than in the previous animal. There was also some congestion present. In addition to some congestion in the kidneys, the tubules were filled with hyalin casts.

A dose of 35 cc (0.16 cc per kg.) produced about the same changes in the liver (fig. 8) that had been produced by a dose of 0.157 cc per kg.

The spleens of all these animals showed congestion only.

Tetrachlorethylene to cattle, in doses of from 15 cc to 35 cc (0.088 cc to 0.16 cc per kg.), probably causes a mild degree of cloudy swelling and some slight reticulation of liver cells. With the larger doses there are added some edema and congestion. However, the changes are mild. The organs appear to tolerate these amounts very well.

EFFECT ON HORSES

It was noted, following the administration of tetrachlorethylene to three horses, that the one which had received the smallest dose (0.066 cc per kg.) had shown the most severe clinical symptoms of intoxication during the four days they were observed.

Microscopic examination of the liver (fig. 9) of this animal showed only a slight amount of edema and cloudy swelling, especially in the central portion of the lobule. The kidneys showed some cloudy swelling of the tubular epithelium and considerable acute degenerative changes associated with calcium deposits in the medullary rays.

When the dose was increased to 0.1 cc per kg. (47 cc to 472 kg.) there was noted somewhat more edema in the liver than in the preceding case. There was also some cloudy swelling and reticulation, especially in the central portion of the lobules. The kidneys were edematous, congested and showed cloudy swelling, but the changes were not so marked as were noted in the kidneys of the horse which had received the smaller dose. No calcium deposits were seen.

A dose of 0.15 cc per kg. (76 cc to 509 kg.) caused marked cloudy swelling, edema and reticulation in the central portions of the lobules (fig. 10) especially. There were a large number of cells which showed no nuclei, a number of them being torn and necrotic. The kidneys showed no changes, except a mild cloudy swelling, considerable edema and congestion. The spleens of all these horses were congested and showed considerable hemosiderosis.

The changes in the liver produced following the administration of tetrachlorethylene to horses at the rate of 0.066 cc per kg. are rather mild but present. A dose of 0.15 cc per kg. causes distinct injury to the liver cells. Horses apparently do not tolerate tetrachlorethylene as well as the smaller animals.

EFFECT ON SHEEP

The first three of the five feeder lambs to which tetrachlorethylene had been given in doses ranging from 5 to 20 cc were held under observation for seven days. The remaining two were held ten days before autopsies were made.

Following a dose of 5 cc to a 52-pound lamb (0.22 cc per kg.) there were noted only mild changes in the liver (fig. 11) and kidneys in the form of reticulation and cloudy swelling. The liver from a smaller lamb which had received a dose of 5 cc (0.29 cc per kg.) showed only a slight uniform reticulation with fatty infiltration in the periphery of the lobules. The kidneys were apparently normal.

When the dose was increased to 0.416 cc per kg. (10 cc to 24 kg. or 53 lbs.), the liver cells showed some reticulation and considerable fatty infiltration in the periphery of the lobules. There were also some edema, congestion and necrotic cells. The glomeruli of the kidneys were apparently normal but the epithelium of the tubules was atrophic and vacuolated.

Ten days after 15 cc had been given to a 46.5-pound lamb (0.71 cc per kg.), there was noted only a slight cloudy swelling of the liver cells. In the kidneys the cells of the tubules appeared granular and shrunken. The glomeruli were edematous, the cells hydropic. These severe changes in the kidneys may have been due to intestinal toxemia and complete absorption of the drug because of a coexistent intussusception in the colon, present during the last five days this animal was under observation.

There were noted in the liver cells (fig. 12) of a 54-pound lamb, ten days after it had been given 20 cc of tetrachlorethylene (0.833 cc per kg.), some reticulation and considerable fatty degeneration in the periphery of the lobules. The changes in the kidneys differed only from those seen following a dose of 0.416 cc per kg., in that there was a tendency for more vacuolization and atrophy of the tubular cells.

Small doses of tetrachlorethylene, i.e., 5 or 10 cc to feeder lambs, seem to produce only very mild injury to the liver. Even though there was seen definite evidence of tissue destruction following the administration of relatively large doses of the drug (0.833 cc per kg.), the organs of sheep seem to show considerable tolerance to it.

EFFECT ON PUPPIES

To determine the effect of tetrachlorethylene on the organs of puppies, seven of these young animals, two weeks of age and weighing from 2 to 3 pounds (0.9 to 1.36 kg.), were dosed at the rate of 3 minims for each 2 pounds of body weight or fraction thereof. Such a practical dosage caused a variation of from 0.22 cc per kg. in the smaller puppies to 0.37 cc per kg. in the larger ones. These puppies were destroyed by inhalations of chloroform at intervals of 1, 2, 3, 4, 7, 10 and 14 days after administration of the anthelmintic. During the time these animals were under observation their diet consisted wholly of mothers' milk. At no time were any symptoms of intoxication shown.

For comparison a normal puppy, five weeks of age and weighing four pounds (1.81 kg.), was chloroformed and the liver, kidneys and spleen removed. Studies of these organs showed cloudy swelling in the liver (fig. 13) with considerable diffuse fatty infiltration, congestion and reticulation. The kidneys were congested, the cells showing a mild degree of cloudy swelling. The spleen was only slightly congested.

The organs of the puppies which had received tetrachlorethylene at the rates of 0.22, 0.29 and 0.29 cc (fig. 14) and were destroyed at the end of 1, 2 and 3 days respectively, showed no changes other than those seen in the organs of the normal puppy.

Four days after a dose of 0.35 cc per kg. had been given, there was seen in the liver considerably more fatty infiltration than had been noted in the livers of the other puppies. There were also present some edema and cloudy swelling and slight reticulation. The kidneys showed slightly more cloudy swelling than normal. The spleen appeared as in the other cases.

No changes different from a normal pup were noted seven days following the administration of 0.22 cc of tetrachlorethylene per kilogram. Following a dose of 0.37 cc per kg., there was seen, after ten days, an increased reticulation in the central portion of the lobule (fig. 15), these cells staining paler than those in the periphery. This increase in reticulation, though present, was not great. The kidneys and the spleen appeared no different than those in the case of the normal puppy.

The liver cells of a puppy, which had received tetrachlorethylene at the rate of 0.27 cc per kg. 14 days previously, showed considerable fatty infiltration and reticulation.

The nuclei and protoplasm stained well, suggesting that the change may not have been pathological, or, if so, healing had taken place. The convoluted tubules of the kidneys showed pronounced cloudy swelling. The spleen appeared normal.

It appears that the organs of puppies tolerate therapeutic doses of tetrachlorethylene exceptionally well, since nothing abnormal was noted in the organs of these animals up to seven days after the administration of 0.22 to 0.27 cc per kg. Ten days after doses of 0.22 to 0.27 cc per kg. had been given, there was some fatty infiltration of the liver cells.

To compare the changes which might take place following the administration of tetrachlorethylene and carbon tetrachlorid, two puppies, litter mates, aged 4 or 5 weeks and weighing 1.52 and 1.81 kg., were each given 0.2 cc per kg. of tetrachlorethylene and 0.2 cc per kg. of carbon tetrachlorid respectively. Both animals were destroyed 60 hours later by inhalations of chloroform. The diet before and after treatment consisted mainly of whole milk, together with a small amount of meat, bread and potatoes.

On microscopic examination, the liver cells (fig. 16) of the puppy which had been given tetrachlorethylene showed a slight uniform reticulation, some edema and a mild degree of fatty infiltration. The liver cells of the puppy which had received carbon tetrachlorid (fig. 17) showed considerable cloudy swelling and congestion. In the central portion of the lobule there were multiple hemorrhages with focal necrosis in the hemorrhagic zone. The kidneys and spleens of both these animals were apparently normal.

Studies of the organs of other puppies which had been given carbon tetrachlorid at the rate of 0.2 and 0.4 cc per kg. and destroyed three days later, showed that the liver (fig. 18) of the latter was considerably infiltrated with fat, which was uniformly distributed throughout all the tissue. In addition, there were some cloudy swelling and a large number of hemorrhages throughout the whole organ, especially in the central part of the lobule. In many places the central vein was filled with hyalin material, while the red cells had broken through into the surrounding tissue. The liver cells in the central part of the lobule, in many places, were necrotic. Considerable edema also was present. The kidneys appeared congested and edematous in the straight tubular zone.

The liver (fig. 19) and kidneys of the puppy which had received carbon tetrachlorid at the rate of 0.2 cc per kg. showed essentially the same changes which had occurred following a dose of 0.4 cc per kg., namely, cloudy swelling, congestion, severe edema, petechial hemorrhages and necrosis of the cells. Nothing abnormal was noted in the spleens of either of these animals, except a slight congestion.

SUMMARY

It is evident that chickens possess considerable tolerance to tetrachlorethylene. This tolerance may be due, in part at least, to the rapid elimination which naturally takes place through the intestinal tract, thus allowing only a limited amount of absorption.

The changes found in the organs of cats four days after the administration of tetrachlorethylene at the rate of 0.25 cc per kg. were slight and could be considered as being almost negligible.

Following the administration of therapeutic doses of tetrachlorethylene to silver black foxes there occurred very little change in the internal organs. These changes were so slight that one would hardly be led to believe that cases of delayed intoxication, such as have been reported by Hanson and Van Volkenberg⁶ following the use of carbon tetrachlorid to foxes, would be apt to occur.

Extremely large doses, i.e., 5 to 10 cc per animal, however, produce necrotic areas in the liver.

Cattle seem to be more susceptible to the action of tetrachlorethylene than do chickens and carnivorous animals. In the doses given, no great amount of tissue destruction took place, showing that there is present in cattle a tolerance to the drug.

Horses do not seem to tolerate tetrachlorethylene well, no doubt due to greater absorption following slow elimination from the intestinal tract. The clinical symptoms manifested after the administration of tetrachlorethylene do not seem parallel to the changes which take place in the liver, the least change having taken place in the liver of the animal which showed the most severe symptoms of toxicity.

While extremely large doses of tetrachlorethylene administered to sheep do cause marked degenerative changes in the liver,

the administration of a therapeutic dose of 5 cc causes very little change, if any at all.

Sheep probably tolerate tetrachlorethylene even better than do cattle, but less so than chickens and carnivora.

Nursing puppies, two weeks of age, seem to tolerate tetrachlorethylene in doses up to 0.3 cc per kg. without the production of any definite tissue changes in the internal organs studied. A larger dose of 0.37 cc per kg. produces only slight changes, those noted being but slightly more than found in apparently normal tissue. The diet of these puppies, which consisted wholly of mothers' milk, apparently had no influence on the tissue changes following administration of tetrachlorethylene.

A dose of 0.2 cc per kg. of carbon tetrachlorid to a four-week-old puppy produced necrosis of the liver cells and hemorrhages in the central portion of the lobules. No changes as marked as these were noted in the livers of any of the animals which had received tetrachlorethylene in even higher dosages.

When the dose of carbon tetrachlorid to a puppy was increased to 0.4 cc per kg., the amount of destruction produced in the liver was more evident than that found after the administration of 0.2 cc per kg.

The reticulation noted in many of the organs studied should hardly be considered as pathologic or as an effect of tetrachlorethylene, since it has been found in the organs of a large number of animals which were normal to all intents and purposes.

Apparently tetrachlorethylene produced but little effect on the spleens of any of the animals regardless of the dose given, since practically the only changes noted were varying amounts of congestion.

CONCLUSIONS

1. Tetrachlorethylene, like carbon tetrachlorid, is more hepatotoxic than nephrotoxic. The changes with the former are more diffusely spread and are not essentially confined to the central portion of the liver lobule as in the case of the latter.

While carbon tetrachlorid produced considerable hemorrhage, edema and necrosis of the liver cells, the lesions noted following the administration of this newer anthelmintic were in no case so severe as those seen after the administration of carbon tetrachlorid.

2. Of the various animals treated, chickens probably tolerated tetrachlorethylene best. Next in order are puppies, cats,

foxes, sheep, cattle and horses. Puppies especially seem to be relatively insusceptible to the action of therapeutic doses of the drug.

3. The changes found in the livers of these animals do not always seem comparable to the dose of tetrachlorethylene administered. This may, in a measure, be due to a susceptibility of certain individuals at various times to the action of the drug or to the rate of absorption and elimination.

4. The clinical symptoms of toxicity shown by certain animals following administration of tetrachlorethylene do not seem to be parallel to the amount of destruction which might take place in the liver.

5. Further evidence of the safety of tetrachlorethylene for animals of various species is shown by the relatively slight amount of destruction seen in the livers of these animals.

6. The kidneys and spleens of the animals used show little or no effects from the action of tetrachlorethylene, except possibly in extremely large doses.

TABLE I—Physical properties of tetrachlorethylene and carbon tetrachlorid

	TETRACHLORETHYLENE	CARBON TETRACHLORID
Symbol	C_2Cl_4	$C Cl_4$
Form	Liquid	Liquid
Color	Colorless	Colorless
Odor	Etherial	Aromatic
Sp. gr.	1.619 at 20°C.	1.632 at 0°C.
Boiling point	121-122°C.	77°C.

ADDENDUM

Since the presentation of the above paper, the clinical effect of tetrachlorethylene on swine and the resultant microscopic changes in their livers, kidneys and spleens have been studied.

Five pigs, weighing from 41 to 66 pounds, were given tetrachlorethylene in doses ranging from 5 to 20 cc (table II). As in previous experiments, the drug was given in soluble elastic globules. The animals were starved for twenty-four hours previous to treatment, three hours after which they were fed and watered.

A few hours after dosing, pigs 386 and 388 seemed slightly dizzy. This condition was only transitory and passed off in about an hour. These symptoms in pig 386 may have been accentuated somewhat by the presence of acute cholera. Nothing

abnormal was noted in the other pigs. Pig 386 refused all food during the time it was under observation, due no doubt to the fact that it was in the beginning stages of hog cholera, this diagnosis being confirmed by autopsy on the fourth day. No changes thought to have been due to tetrachlorethylene were seen.

On microscopic examination of the liver of this pig were seen some congestion and a slight cirrhosis, with occasional multiple miliary abscesses between the lobules. Accompanying these lesions there was some fibrosis which in some places extended into the lobule itself. No evidence of any degenerative changes due to the tetrachlorethylene were noted (fig. 20).

The kidneys of this animal showed some hemorrhages and chronic inflammatory fibrosis. The tubular epithelium in places showed hydropic degeneration, with atrophy and desquamation. There were also some miliary abscesses and moderately severe nephritis. No doubt these changes in the kidneys were due to the infection present, but they may possibly have been aggravated by the tetrachlorethylene. The spleen was congested and edematous.

Pigs 387 and 390 were slaughtered four days after having been given tetrachlorethylene in doses of 5 cc and 20 cc respectively.

On autopsy of pig 387 nothing abnormal was noted, except a few subserous hemorrhages of the spleen. Pig 390 showed postmortem lesions of beginning hog cholera.

Microscopic examination of the liver of pig 387 showed only a mild cirrhosis and slight congestion. The spleen was slightly congested and edematous.

In the liver of pig 390 there was seen, in the central portion of the lobule, a moderate degree of fatty degeneration (fig. 21). There was some congestion, with occasional hemorrhages near the central veins. In the kidneys there were present chronic nephritis and scattered miliary abscesses. However, this condition was less severe than was seen in the kidneys of pig 386. The spleen was congested.

The cirrhosis seen in the livers of pigs 386 and 387 was probably not caused by the tetrachlorethylene, since the same condition was noted in a liver obtained from an apparently normal hog which had been slaughtered recently in one of the local packing-houses. In this liver were also seen a few miliary foci of streptococcus infection.

Pigs 388 and 389 were not slaughtered at the time of the other pigs but were held for later experimentation. The latter animal died of acute hog cholera, eighteen days after treatment with tetrachlorethylene. No microscopic studies of the internal organs were made.

Pig 388 was held under observation for 60 days after treatment. At no time during this period were any toxic symptoms noted. No postmortem examination was made.

Unfortunately, none of these pigs passed any worms after treatment nor were any found on postmortem. As a result no data could be obtained as to the efficacy of the anthelmintic for swine. However, the experiments did show that tetrachlorethylene is not toxic to swine in doses of from 0.19 to 0.93 cc per kilogram.

TABLE II—*Tetrachlorethylene to swine*

PIG	WEIGHT (LBS.)	CL ₂ C ₄ (CC)	RATE PER KG. (CC)	WORMS PASSED	WORMS POSTMORTEM
386	60	8	0.296	0	0
387	52	5	0.19	0	0
388	66	10	0.33	0	0
389	41	15	0.806	0	0
390	47	20	0.938	0	0

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EXPLANATION OF PLATES

(All photomicrographs 16-mm. objective. 4x ocular by 24-in. objective.)

PLATE I

- FIG. 1.—Liver of chicken. Tetrachlorethylene at rate of 0.83 cc per kg. Killed after 11 days.
FIG. 2.—Liver of chicken. Tetrachlorethylene at rate of 16.64 cc per kg. Killed after 7 days.
FIG. 3.—Liver of cat. Tetrachlorethylene at rate of 0.25 cc per kg. Killed after 4 days.
FIG. 4.—Liver of cat. Tetrachlorethylene at rate of 0.51 cc per kg. Killed after 4 days.

PLATE II

- FIG. 5.—Liver of fox. Tetrachlorethylene at rate of 1.62 cc per kg. Killed after 4 days.
FIG. 6.—Liver of fox. Tetrachlorethylene at rate of 2.94 cc per kg. Killed after 4 days.
FIG. 7.—Liver of calf. Tetrachlorethylene at rate of 0.088 cc per kg. Killed after 7 days.
FIG. 8.—Liver of calf. Tetrachlorethylene at rate of 0.16 cc per kg. Killed after 7 days.

PLATE III

- FIG. 9.—Liver of horse. Tetrachlorethylene at rate of 0.066 cc per kg. Killed after 4 days.
FIG. 10.—Liver of horse. Tetrachlorethylene at rate of 0.15 per kg. Killed after 4 days.
FIG. 12.—Liver of sheep. Tetrachlorethylene at rate of 0.833 cc per kg. Killed after 10 days.

PLATE IV

- FIG. 11.—Liver of sheep. Tetrachlorethylene at rate of 0.22 cc per kg. Killed after 7 days.
FIG. 13.—Liver of normal pup.
FIG. 14.—Liver of pup. Tetrachlorethylene at rate of 0.29 cc per kg. Killed after 3 days.
FIG. 15.—Liver of pup. Tetrachlorethylene at rate of 0.37 cc per kg. Killed after 10 days.

PLATE V

- FIG. 16.—Liver of pup. Tetrachlorethylene at rate of 0.2 cc per kg. Killed after 60 hours.
FIG. 17.—Liver of pup. Carbon tetrachlorid at rate of 0.2 cc per kg. Killed after 60 hours.
FIG. 18.—Liver of pup. Carbon tetrachlorid at rate of 0.4 cc per kg. Killed after 3 days.
FIG. 19.—Liver of pup. Carbon tetrachlorid at rate of 0.2 cc per kg. Killed after 3 days.

PLATE VI

- FIG. 20.—Liver of pig. Tetrachlorethylene at rate of 0.296 cc per kg. Killed after 4 days.
FIG. 21.—Liver of pig. Tetrachlorethylene at rate of 0.938 cc per kg. Killed after 4 days.

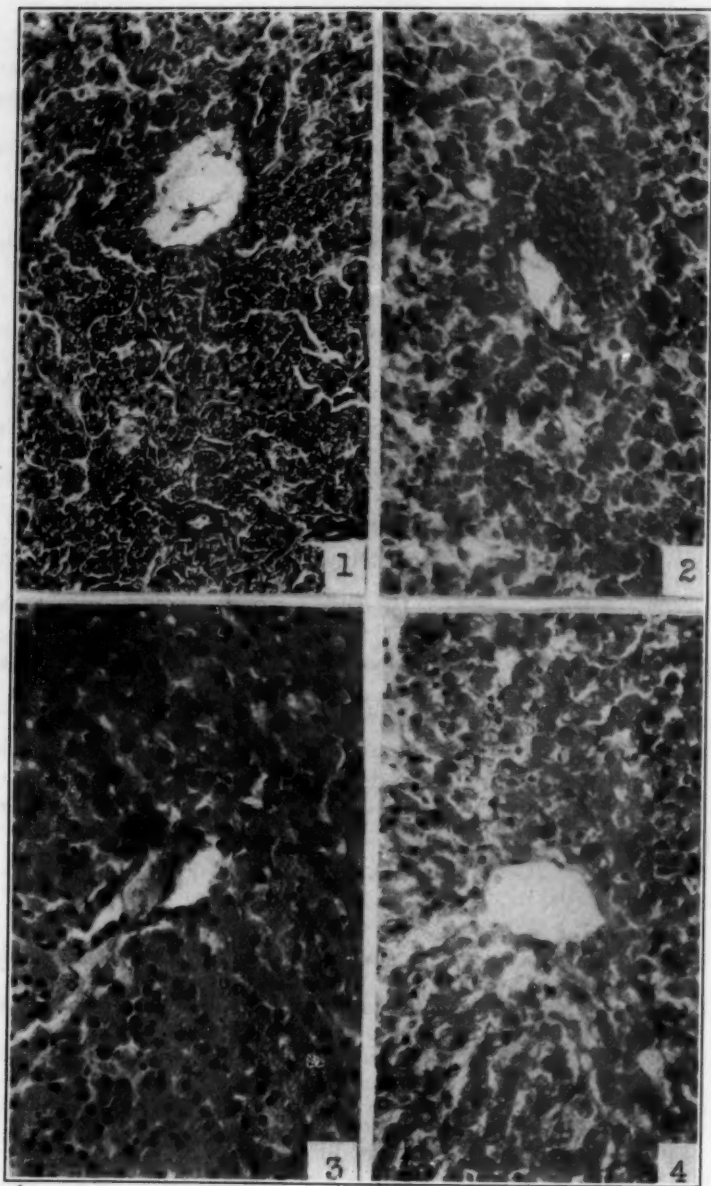


PLATE I

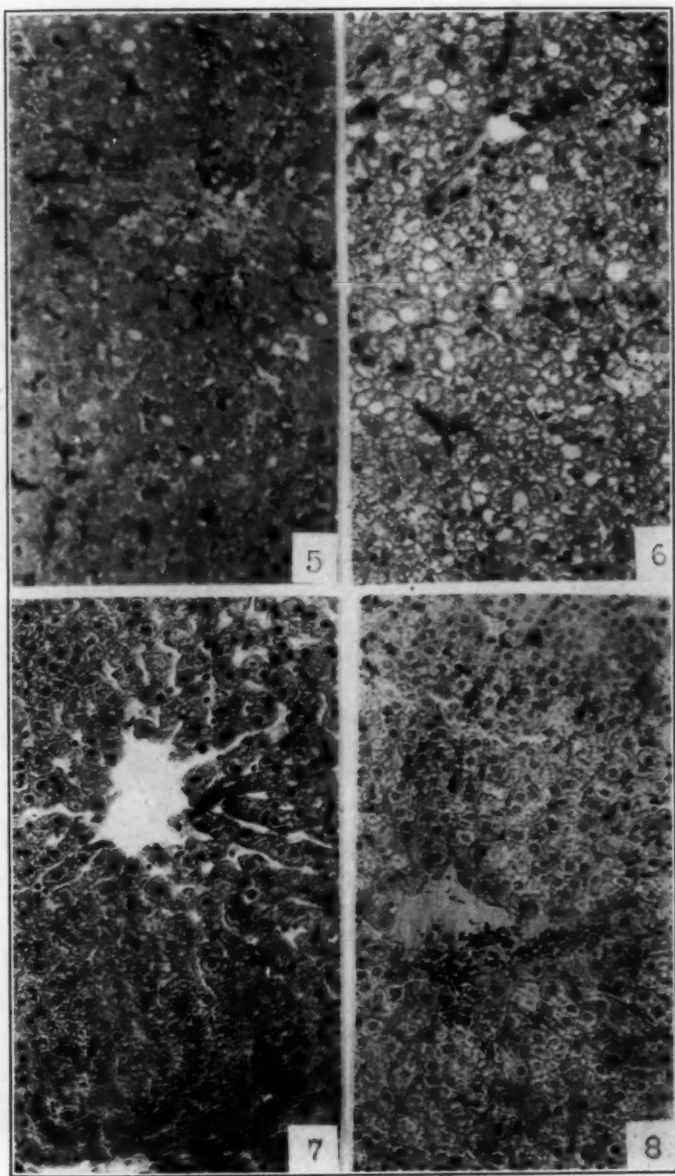


PLATE II

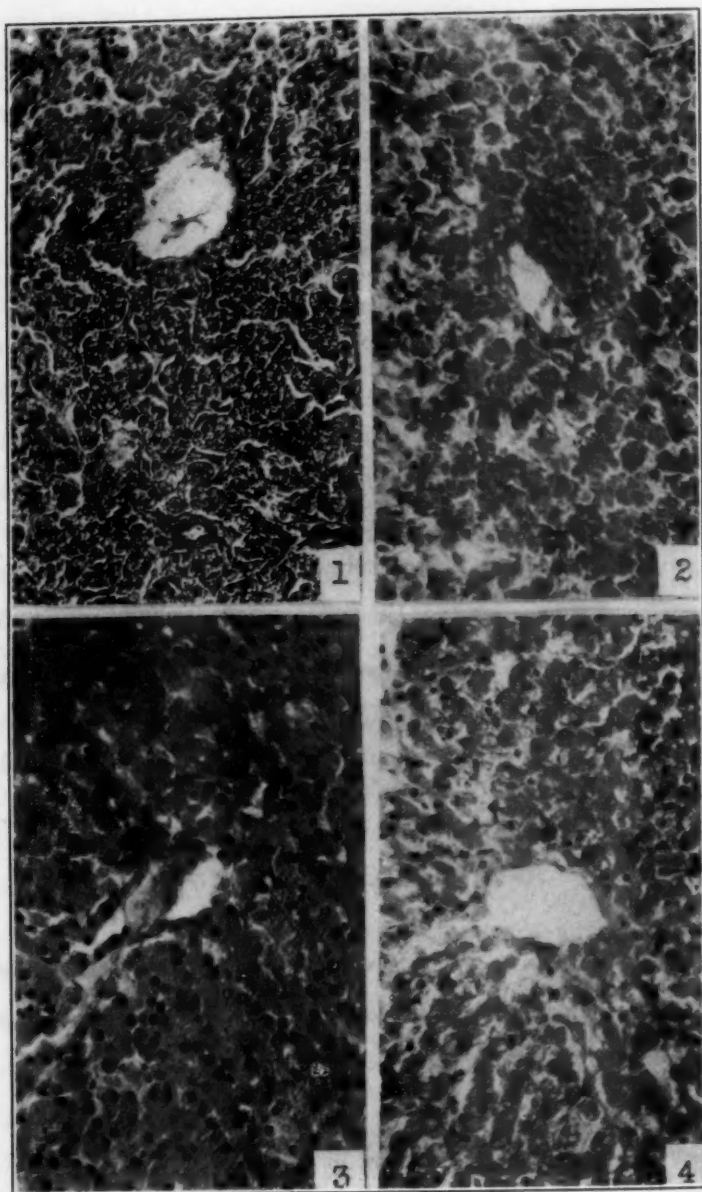


PLATE I

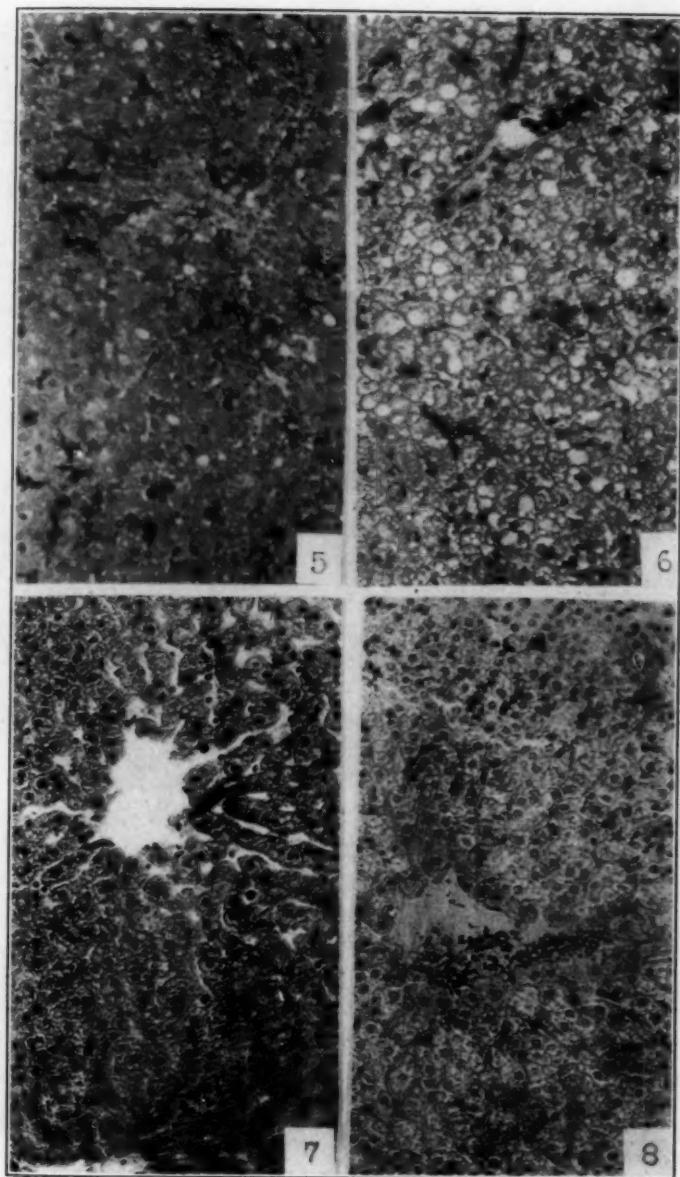


PLATE II

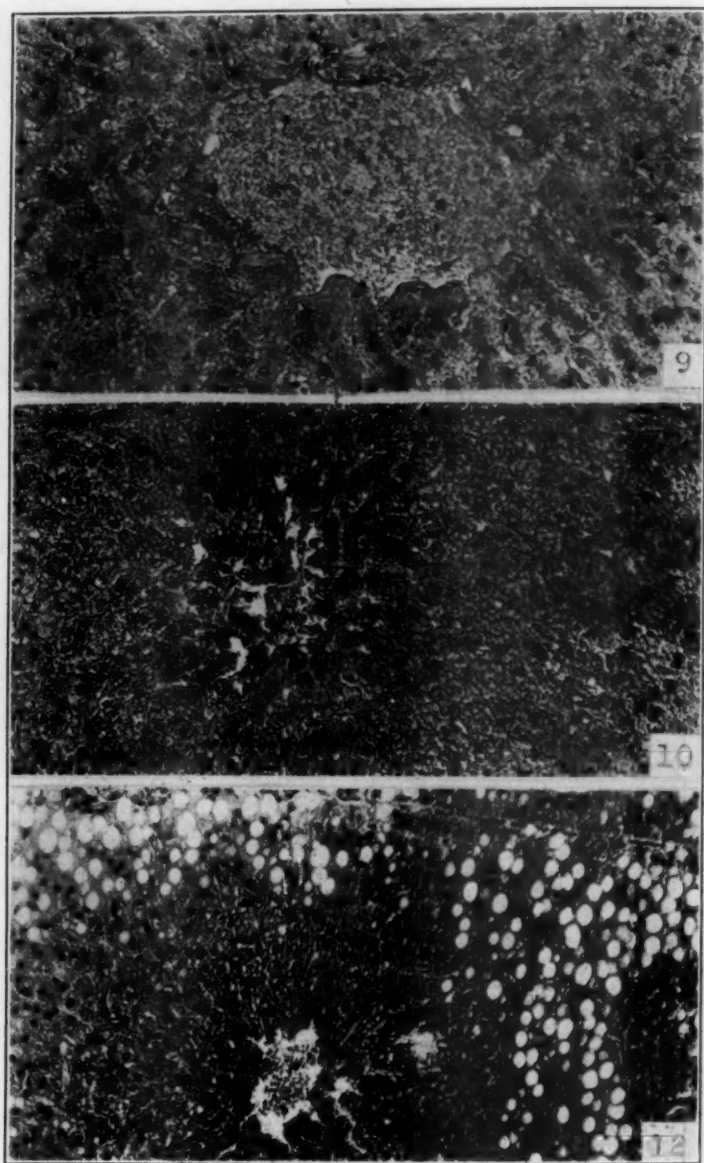


PLATE III

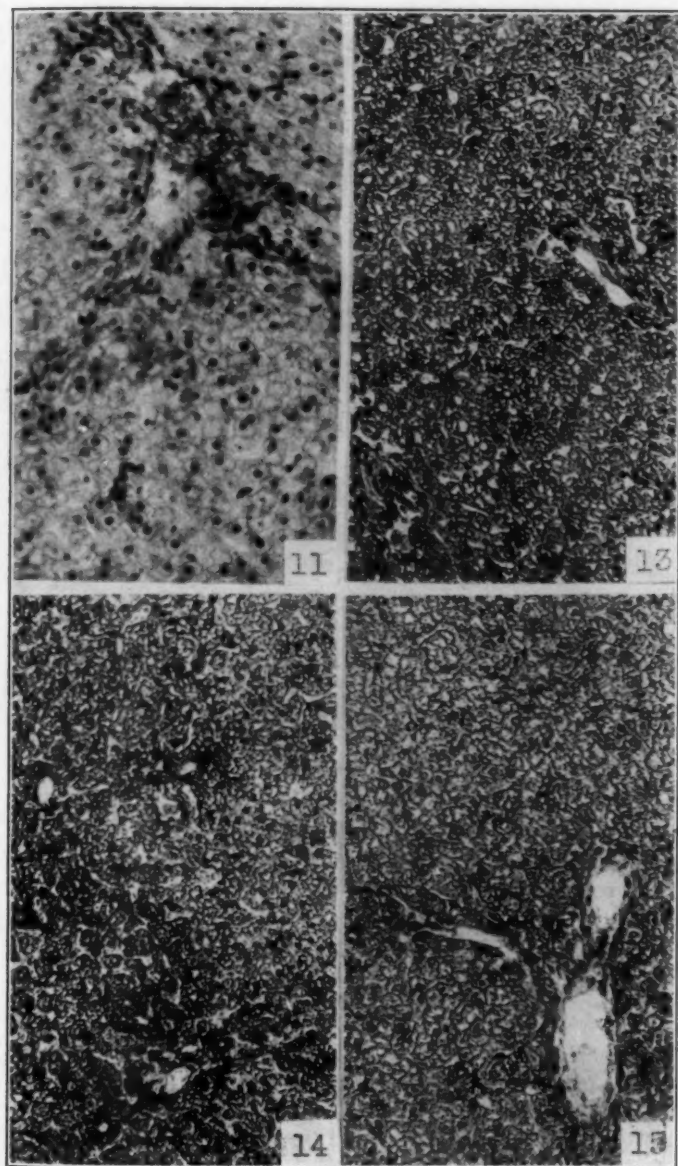


PLATE IV

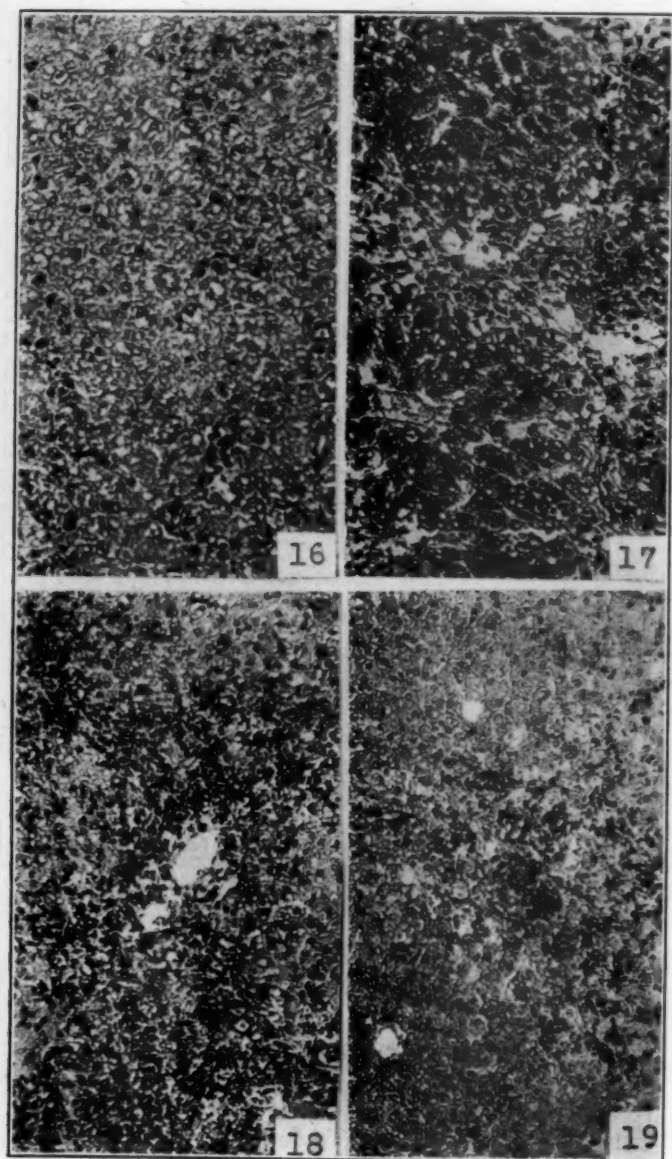


PLATE V

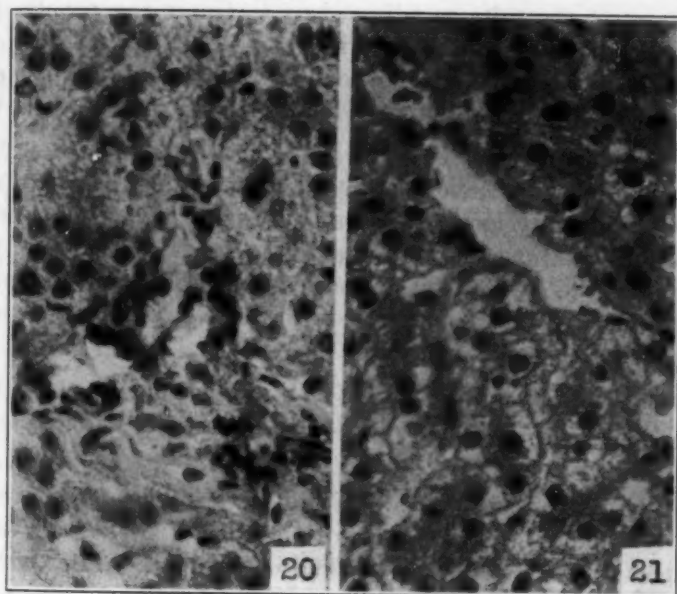


PLATE VI

THE X-RAY AND SMALL ANIMAL PRACTICE*

By J. G. HORNING, Houston, Texas

In roentgenographic work on small animals exclusively, it is entirely practical to have the tube-stand attached to the table on which the subject is placed. Two positions for the tube-stand generally will be found sufficient. One of these is a position directly above the surface of the table, with the target of the tube so adjusted as to throw the penetrating rays directly downward. This position is used for skiagraphic work. The other is a position directly under the surface of the table, with the target of the tube so adjusted as to throw the penetrating rays directly upward, this position being used for fluoroscopic work. The stand in both positions is so arranged as to permit it being raised and lowered, to bring it closer or farther from the subject.

For this work we have designed a special table, having a flat surface sufficiently large to accomodate the various subjects in the various positions necessary for the work. The surface of the table should be covered with sheet lead and this in turn covered with a thin layer of wood veneer to protect the lead surface and keep it from becoming scratched.

For small animals, plates 11 x 14 inches would be about the largest necessary, much smaller plates being used for most of the work.

About twenty inches from one end of the table and centered laterally should be a hole approximately a foot square, with the edges beveled to permit it being closed with various covers made for this purpose. One of these covers should be of the same construction as the surface of the table and is used in position for skiagraphic work. The other covers are made to present the same general appearance from the surface, but are constructed with apertures in the center closed only with a thin layer of fiber or pasteboard. They can be of varying sizes, from three inches square up to a size nearly equal to that of the cover. The greatest service that this machine is put to is in fluoroscopic examinations of fractures, suspected foreign-body cases, and digestive cases where the test meal is used.

*Presented at the sixty-third annual meeting of the American Veterinary Medical Association, Lexington, Kentucky, August 17-20, 1926.

The fluoroscopic examination is not as clear as a ray picture would be, as the number of milliamps used is much smaller, being three to five in fluoroscopic work and from fifteen to thirty-five in picture work. One has little time in fluoroscopic examinations to study the shadow in detail, which can be done when examining the ray picture.

As an aid to endoscopy, the roentgenologist is helped by pneumonography, by increasing the visibility of the bronchial tree in penetrating foreign-body cases, which will assist in determining the best method of removal.

In cases of long suppuration a more accurate determination regarding the location and extent of the process is possible, which will often be of great assistance in deciding the proper form of treatment.

Lung-mapping, which is pneumonography, combined with a diagnostic bronchoscopy, will often lead to an early diagnosis in neoplasm of the lung.

Pneumonography used in conjunction with roentgenology affords the best available diagnostic aid to the thoracic surgeon.

VITAMIN STUDIES

Insight into the real mechanism of scurvy, beri-beri and all of the diseases caused by a lack of vitamins is the goal of a group of workers in the Hygienic Laboratory of the U. S. Public Health Service, according to a note in *Science*. In the division of pharmacology, M. I. Smith, W. T. McClosky and E. G. Hendrick have been dosing devitaminized rats with various toxic drugs to see how the reaction of the avitaminous organism varies from the normal. They found that the ability of the tissues of vitamin-deficient animals to resist poisons is considerably reduced. The susceptibility of animals that have been deprived of vitamin A, which is necessary for health and growth, and the anti-neuritic vitamin B, to several nerve poisons indicates a general impairment of the nervous system. The markedly decreased resistance of vitamin-A-deficient rats to morphin suggests, according to the authors, that the respiratory center is weakened by a lack of this essential food element. "Sluggish circulation and weakened respiratory center," say the authors, "would account satisfactorily for the frequent occurrence of pulmonary congestion and lung disease in rats on a vitamin-deficient diet."

AN OUNCE OF PREVENTION

By J. C. FLYNN, Kansas City, Mo.

Almost every worthy effort is crowned with some degree of success. Such is the case with the men of our profession who are laboring studiously in their efforts to give us preventive medicine worthy of the title.

Only a few years ago we were given canine distemper bacterin for the prevention of distemper. This the practicing veterinarian accepted, with the hope that at last an agent had been found that would make it possible to immunize young dogs successfully against distemper and thereby make it possible for him to take into his hospital young dogs suffering from injuries, skin diseases, digestive disturbances, etc., without danger of them contracting this much-dreaded disease.

How well I remember how pleased I was when I immunized six Boston terrier pups, about two months old, by injecting them with 0.5 cc of canine distemper bacterin and placed them in my contagious ward for three weeks, without having one of them contract distemper. After this successful experience, I was inclined to put considerable faith in the preventive properties of canine distemper bacterin. Next, we were introduced to canine distemper serum, which we found to be an improvement over the more slowly-acting bacterin. We found that we got a quick-acting though temporary and uncertain immunity. In the use of serum we found also that we had an agent that had certain curative, as well as preventive value, but not satisfactory by any means. We were then introduced to the sero-bacterin, a combination of serum and bacterin, produced with the idea that the combination might produce a quick and permanent immunity. Our experience showed that the sero-bacterin had little advantage over the serum or bacterin alone.

More recent investigators have been working along the line of the simultaneous method used in hog cholera (not doing a general practice, I am not very familiar with hog cholera control), profiting by the knowledge gained by past investigators and avoiding the pitfalls that beset them. The later investigators have apparently produced an agent that will work in a larger percentage of cases than anything we have used in the past. It is acknowledged that facts are more often ascertained by investigation than by accidental discovery. Therefore, the

men who are working day after day on this problem are more likely to have their efforts crowned with success than those who are simply waiting for something to turn up. My efforts in the control and treatment of distemper, by using bacterin, serum and sero-bacterin; have not been crowned with the success that one would desire, yet I can not say that it has been entirely unsatisfactory. The profession, like the layman, is likely to be very exacting in its demands and is likely to remember failures and forget successes.

If a client's dog is successfully immunized against distemper, he goes his way satisfied. He got what he expected and paid for, and he says nothing about it. If it fails to immunize the dog, he is a dissatisfied person and complains loudly and often. We are not at all unlike him. So I have been keeping a record on the use of an agent known as sero-toxylin in the prevention of distemper. I did this so that I would not deceive myself by remembering only the failures.

Having in mind the fact that a silent client is nearly always a satisfied one, I am adding to the credit side all of the cases I was unable to follow up closely, believing that had the treatment failed, I would have been so advised in a large percentage of cases. Table I shows the distribution of the breeds in 134 cases, of pups ranging in age from 4 to 12 months, in which the product was used.

TABLE I—*Distribution of 134 pups, according to breed.*

BREED	NUMBER
Bull dogs (Boston, English & terriers)	29
German Shepherds	26
Fox terriers	14
Setters	12
Collies	12
Airedales	10
Pekingese	3
Pointers	3
Spitz	2
Beagle hounds	2
Russian wolf hounds (Berzoi)	1
St. Bernards	1
Great Danes	1
Cockers	1
A. O. B. (any old breed)	17
Total	134

Of the 134 treated, four developed virulent cases and died. Two others developed bad cases but recovered. Some twenty

developed mild cases of distemper and were treated in our hospital, recovering in five to ten days. These cases were always placed in our contagious ward, and the fact that they spent a few days in this ward and remained well and free from distemper after returning home proves immunity: In fact, I would prefer that dogs having received preventive treatment contract a mild case of distemper, because I am then quite positive they are immune for all time.

Two other cases were presented to us suffering with chorea, which we were quite sure, from the owners' description, had passed through mild cases of distemper, but could not be diagnosed as distemper cases at the time. The fact that chorea is nearly always preceded by a case of distemper would make it reasonably certain that these dogs had passed through a mild attack of the disease.

Of the 106 cases remaining, 31 cases moved away, were non-residents, or were in remote districts without phones and we could not get records. The other 75 cases have remained free from distemper to date, which is a year since receiving treatment. It is reasonable to believe that practically all of the 106 are immune dogs, as very few dogs remain in a large city or travel from one city to another without being exposed to distemper. Four deaths, two recoveries from bad cases and two cases of chorea might be classed as cases unsatisfactory as far as prevention is concerned. Thus, taking credit for the 31 cases which we were unable to check up on, and the cases that may not have been exposed to distemper in the 75 cases we could check up, and classing the 20 mild cases as satisfactory, we would have about 94 per cent efficient. Of course we are assuming considerable when we claim immunity for the 106 cases, but in the absence of complaint, we have a right to say the results are 94 per cent satisfactory.

Of the small number of cases recorded here, which I think is too small for us to say whether or not we have an immunizing agent that will safeguard our young dogs in a satisfactory manner, I have this to say, however: It has proved satisfactory in a greater percentage of cases than anything used by us heretofore.

It might also be of interest to know that, of the four deaths, three were German Shepherds and the other a Spitz.

COYOTE SUSCEPTIBLE TO SALMON POISONING

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Corvallis, Oregon*

In a previous report¹ it was suggested that coyotes might be susceptible to the so-called salmon poisoning. People living in the sections of western Oregon where this disease is most prevalent have believed this to be true. Cram² has reported finding the fluke (*Nanophyes salmincola* Chapin) which causes this trouble, in the intestines of an apparently healthy coyote trapped in western Washington. She suggests the possibility of the coyote being a natural host of this fluke. It seems probable that there is some other host than the dog, as it is difficult to believe that the few dogs living along the infested streams could contaminate them sufficiently to cause the large number of flukes which are present in practically every salmon or trout taken from these streams.

Studies with coyotes (*Canis latrans*) have been made as follows: Two coyotes (1 and 2) were received from R. R. Spalding, one of the predatory-animal hunters of the U. S. Biological Survey, on March 21, 1926. On March 27, a large amount of trout containing living cystic flukes was placed in the cage with these coyotes. It had been eaten by the following morning.

Ten days later coyote 1 was apparently sick. Temperatures were not taken. On April 10, fourteen days after the fish was eaten, this coyote was found dead in the cage.

Autopsy revealed typical lesions of salmon poisoning. Large numbers of both mature flukes and fluke eggs were present in the bowel content. Microscopic examination showed flukes buried in the mucosa of the duodenum. Coyote 2 was fed fish containing living cystic flukes five times, as follows: April 10, April 26, May 3, May 17 and May 18. This animal did not at any time show any definite symptoms. It was destroyed May 22, four days after it had eaten parasitized fish the last time.

On autopsy, a marked hemorrhagic inflammation of the entire intestinal mucosa was found. There was also present a diphtheritic membrane on the mucosa of the duodenum and jejunum,

¹Received for publication, December 29, 1926.

but there was no free blood in the intestinal content, as is usually present in dogs dying from salmon poisoning. Flukes were very numerous throughout the entire intestine. These parasites were approximately the size of mature flukes, but contained only one or two eggs each. Their movements were more active than those of mature ova-producing flukes.

Two coyote pups (3 and 4), estimated at six to eight weeks of age, were received from Mr. Spalding, April 21, 1926. The pups were about the same size, but one (No. 3) was the more aggressive and habitually drove the other away when food was placed in the cage. Fish containing living cysts was placed in their cage, April 26 and May 3.

On May 8, twelve days after the first fish was fed, coyote 3 was dead. Autopsy showed severe inflammation of the intestine with free blood in the bowel. Numerous mature flukes containing ova, numerous immature, very active flukes, and large numbers of ova were present in the intestinal content.

On May 17, fourteen days after the second fish was fed, coyote 4 was dead. Typical lesions of salmon poisoning, i. e., severe hemorrhagic inflammation of the intestinal mucosa with free blood, numerous mature flukes, and numerous fluke eggs in the bowel content, were found on autopsy.

DISCUSSION

The habits of the coyotes made it impossible to observe symptoms until the later stages of the disease. It is probable that coyote 2 suffered from salmon poisoning and recovered, as the lesions found were quite similar to those observed in dogs which have recovered from attacks of the disease. The active movements of, and the absence of eggs in, the flukes found in this coyote indicated that they were developing from the cysts which were eaten four or five days before the animal was destroyed.

Coyote 3 probably contained flukes from both feedings of parasitized fish, one eaten twelve days before death and one five days before death.

Coyote 4 died fourteen days after fish was placed in the cage the second time. It is probable that it did not have an opportunity to eat any of the first fish placed in the cage.

CONCLUSIONS

The coyote (*Canis latrans*), as well as the dog, the blue and the silver black fox, is susceptible to salmon poisoning.

It develops lesions typical of those found in dogs suffering from salmon poisoning.

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TO STUDY MILK QUESTION

At a meeting of the Certified Milk Producers' Association, held in New York recently, the Secretary was authorized to invite to a conference, to formulate plans for coordinated future work on *B. abortus* and its relation to the milk supply, the following well-known scientists: Dr. J. Howard Brown, Johns Hopkins University, Baltimore, Md.; Dr. K. F. Meyer, Hooper Foundation, San Francisco, Calif.; Dr. L. F. Rettger, Yale University, New Haven, Conn.; Dr. Theobald Smith, Rockefeller Institute, Princeton, N. J.; and Dr. Veranus A. Moore, New York State Veterinary College, Ithaca, N. Y.

This action upon the part of the producers of certified milk is the outcome of the confusion, which has arisen relative to the possible dangers of raw milk for human consumption when contaminated with *B. abortus* and the close relation of the latter to the organism responsible for undulant fever.

THE FOAM OF MAD DOGS

Many vain attempts have been made to discover why the foam in the mouth of mad dogs is such a powerful agent for the transmission of rabic virus. It has been established that the micro-organism of rabies exists only in the nerve tissues and is propagated only by them. Dr. Roux, director of the Pasteur Institute, has announced to the Academy of Sciences that Messieurs Manouelien and Viala have discovered the explanation sought. The tongue of the dog contains large numbers of nerve cells, probably tactile, immediately below the epithelium; in these, in cases of rabies, one finds a large accumulation of Negri bodies. In labioglossopharyngeal paralysis, which is associated with rabies in the dog, the dog clicks his tongue frequently against his teeth or the objects that he bites and bruises the delicate epithelium, which allows the Negri bodies to be distributed throughout the saliva.

—Jour. Amer. Med. Asso.

EFFICACY OF "IODINE VERMICIDE" PILLS FOR THE TREATMENT OF ASCARID AND HOOKWORM INFESTATIONS IN SILVER FOXES.

Critical Experiments

By W. L. CHANDLER, *East Lansing, Mich.*

Bacteriological Section, Michigan State College

"Iodine Vermicide" is a vermicide iodine preparation developed for internal administration to animals for the destruction of nematode parasites of the gastro-intestinal tract. It consists of a halogen proteinate precipitated in a suspensoid state and carrying adsorbed iodine. The pills are prepared by concentrating and desiccating this material and pressing it into masses which are then sugar-coated. Two sizes of pills were used in the following experiments: one containing 0.4 gram of adsorbed iodine, and one containing 0.2 gram of adsorbed iodine.

In a previous paper¹ the writer described the results of critical experiments on the value of a similar vermicide preparation which was mixed with mineral oil and loaded into soft gelatin globules. The pills are a more recent development and appear to be more stable than the globules. Test dosings of numerous foxes indicated that these pills were entirely satisfactory; and taking advantage of the opportunities during the pelting season, critical experiments were conducted for the purpose of determining the efficacy of these pills for dosing foxes for hookworms and ascarids.

These experiments were conducted on the Jackson Silver Fox Ranch, at Morley, Michigan; caretaker, Mr. James Massey, cooperating. The animals were placed in wooden-floored cages and fasted for from eighteen to twenty-four hours prior to dosing. The animals were killed for pelting not sooner than two days after being dosed. The feces voided from the time of dosing until the animals were killed were scraped from the cage, fragmented and washed by the usual methods and examined for the presence of worms. The intestines were slit open through the entire length, the contents scraped into glass-bottom dishes and washed by the usual method and examined for the presence of worms.

The accompanying tables give the results of this work.

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TABLE I—Data on group 1. Dose—two pills, each containing 0.4 gram adsorbed iodine

FOX	WORMS VOIDED		WORMS POSTMORTEM		EFFICIENCY %		REMARKS
	HOOK-WORMS	ASCARIDS	HOOK-WORMS	ASCARIDS	HOOK-WORMS	ASCARIDS	
1	++	—	—	—	100		
2	+	—	—	—	100		Scant feces

TABLE II—Data on group 2. Dose—one pill, containing 0.4 gram and one containing 0.2 gram

FOX	WORMS VOIDED		WORMS POSTMORTEM		EFFICIENCY %		REMARKS
	HOOK-WORMS	ASCARIDS	HOOK-WORMS	ASCARIDS	HOOK-WORMS	ASCARIDS	
1	+	—	—	—	100		
2	+	+	—	—	100	100	
3	++	—	—	—	100		
4	+	—	—	—	100		
5	++++	+	—	—	100	100	
6			—	—			No feces collected
7	++	—	—	—	100		
8	+	—	—	—	100		
9			—	—			No feces collected
10			—	—			No feces collected
11			—	—			No feces collected
12			—	—			No feces collected

TABLE III—Data on group 3. Dose—two pills, each containing 0.2 gram adsorbed iodine

FOX	WORMS VOIDED		WORMS POSTMORTEM		EFFICIENCY %		REMARKS
	HOOK-WORMS	ASCARIDS	HOOK-WORMS	ASCARIDS	HOOK-WORMS	ASCARIDS	
1	++	—	—	—	100		

TABLE IV—Data on group 4. Dose—single pill, containing 0.4 gram adsorbed iodine

FOX	WORMS VOIDED		WORMS POSTMORTEM		EFFICIENCY %		REMARKS
	HOOK-WORMS	ASCARIDS	HOOK-WORMS	ASCARIDS	HOOK-WORMS	ASCARIDS	
1	++	++	—	—	100	100	
2	++	+	—	—	100	100	
3	+	+	—	—	100	100	
4	++	—	—	—	100		
5	++	—	—	—	100		
6	+	+	—	—	100	100	
7	++	+	—	—	100	100	
8	+++	26	—	6	81	81	
9	+	—	—	—	100		
10	—	—	—	—	?	?	
11	+++	+++	—	6	80	80	
12	++	+	—	—	100	100	
13	++++	+	—	—	100	100	
14	+++	+++	—	4	100		
15	+	—	—	—	100		

From the tables it appears that even single pills containing 0.4 gram adsorbed iodine are 100 per cent efficient, except in cases where a heavy ascarid infestation occurs. In the cases of animals 8, 11 and 14 (group 4), the number of ascarids probably retarded the passage of the pill through the intestine so that the free iodine had all combined with the ingesta before the end of the small intestine was reached. This limitation may be overcome, however, either by increasing the amount of adsorbed iodine, say to 0.5 gram, or by giving two pills, or by redosing the same animals, two or three days after the first dose.

Note: An interesting observation in the connection with dosing silver foxes with "Iodine Vermicide" is that no larval worms have been encountered in the intestines of animals killed as late as five days after dosing. No explanation of this observation will be offered at present.

REFERENCE

¹Chandler, W. L.: On the vermicide value of iodine. Mich. Agr. Coll. Quar. Bul., February, 1924.

STOCK POISONING BY PLANTS IN THE NIGHTSHADE FAMILY*

By ALBERT A. HANSEN, *LaFayette, Indiana*

Purdue University Agricultural Experiment Station

The *Solanaceae*, or nightshade family of plants, contain many species long known to be dangerously poisonous. Chemists have discovered a number of toxic alkaloids in various members of this family, among the most important of which are *solanin*, *atropin*, *scopalmin* and *hyoscyamin*. Experimental work by Cornevin, M'Fadyen, Pott and others has established the poisonous properties of various plants in the nightshade family.

In addition to containing poisonous species, this group includes such important medicinal plants as belladonna (*Atropa belladonna*), a southern European and Asiatic species from which the belladonna of commerce is derived; important edible species, as the tomato and potato, and the commercially valuable tobacco plant.

The exact conditions under which the various members of the nightshade family become dangerously poisonous are not known. In the case of the potato, the *solanin* content seems to increase to the dangerous stage when the tubers turn green under the influence of sunlight. The variation in degree of toxicity of the common nightshade (*Solanum nigrum*, L.) has been commented on by a number of writers. The principal influencing factors are believed to be the soil, climate and degree of maturity of the plant.

During the course of the field work with poisonous plants performed by Purdue University, a number of interesting cases of live stock losses have been investigated that were attributed to poisoning by members of the nightshade family, some of which are here recorded.

NIGHTSHADE (*Solanum nigrum*, L.)

Nightshade is a common weed of pastures, woodlots, yards and waste places. The species has long been regarded as poisonous, although the toxicity varies greatly. It is believed by some that musky-odored plants are most poisonous. The toxic alkaloidal glucoside *solanin* is present in the stem and green berries,

*Presented before the annual meeting of the Indiana Veterinarian Medical Association, Indianapolis, January 18-19-20, 1927.

although the mature fruits appear to be harmless and have been used in the making of pies and tarts.

A number of live stock losses have been noted in Indiana where the evidence pointed to nightshade as the cause of the trouble.

On the farm of Mrs. Sam Bell, of Cypress, Indiana, nine ducks and six chickens died during October, 1924, after exhibiting symptoms of plant poisoning. An examination of the poultry-yard revealed the presence of large quantities of nightshade and there was evidence that the green berries had been eaten by the



FIG. 1. Nightshade, a poisonous plant. The green berries are the most dangerous part.

birds. The animals became paralyzed, lay stretched out on the ground for several hours and died within ten hours after the first symptoms were noticed. After the nightshade was cleaned out of the yard, no further trouble was experienced.

Murray Dunham, of Union Township, Delaware County, Indiana, had experienced trouble in his hog pasture during the month of July for several years. The animals developed a peculiar stare, staggered considerably and were of little value thereafter. An examination of the pasture revealed large quantities of nightshade, which was cleaned out and the follow-

ing season was the first year for several years past that trouble of this character was not noted.

On the Frank Flory farm, near Hamlet, Indiana, the loss of a cow and the illness of another animal was attributed to plant poisoning by Dr. N. I. Peigh, the attending veterinarian. An examination of the woods in which the animals had been grazing revealed the presence of huge quantities of nightshade, which made up about 90 per cent of the undergrowth, and a number of the plants showed evidence of having been grazed upon. The trouble occurred during a period of drought when the pasture



FIG. 2. Bull nettle, showing the flowers, berries, leaves and prickly stem.

was short. The principle symptoms exhibited by the affected animals were staring eyes, dilated pupils, extreme nervousness and a staggering gait.

The death of sheep after eating the green berries of nightshade has also been noted in Indiana.

BULL NETTLE (*Solanum carolinense*, L.)

When five sheep died on the farm of Bert Cook, near Jamestown, Indiana, Dr. A. O. Nelson of Advance, Indiana, was called on the case and the trouble was diagnosed as forage poisoning.

A postmortem examination revealed the presence of large quantities of the berries of the common bull nettle, also known as horse nettle and tread-softly, in the stomachs of the dead animals. The intestines were inflamed, showing distinct lesions. The pasture in which the animals had been grazing was inspected and found to be heavily infested with bull nettles. The remaining sheep were then changed to an uninfested bluegrass pasture and no further trouble was experienced.

Bull nettle is held to be poisonous by a number of writers. Kraemer reports the presence of *solanin* in the berries. A careful description of the symptoms could not be secured although convulsions prior to death were noted.

Bull nettle is a native perennial, found abundantly in meadows, pasture and cultivated land from New England to Iowa and southward to Texas and Florida. Grazing animals ordinarily reject the plant on account of the sharp spines, although the berries are occasionally eaten.

POTATO (*Solanum tuberosum*, L.)

The tops, greened tubers and green sprouts of the common white potato contain *solanin* and may prove fatally toxic. One reason why the use of the potato spread so slowly in Europe after its introduction from the New World was because the European farmer scattered the tubers broadcast as he did other seed and the poisoning that resulted from the greening of the exposed tubers even caused laws to be enacted against the use of the crop.

In a recent résumé of potato poisoning, Gribel¹ states that potato poisoning usually occurs during the summer months, due to the consumption of new or green, or old and much sprouted potatoes. Analyses have shown the *solanin* content of the peelings to be higher than that of the interior of the tubers. Pammel cites the case of the death of a cow after eating potato parings, the postmortem revealing intestinal hemorrhages with enlarged spleen and liver. M'Fadyen has demonstrated that old sprouted potatoes are toxic to horses.

An interesting case of what appeared to be potato poisoning in poultry was noted in Indiana on the farm of Henry Schroeder, of Lamar. During the late winter several bushels of potatoes were removed from storage and found to be covered with small green sprouts. The sprouts were rubbed off and cast out of the kitchen window as chicken feed. Within a few hours eighteen of the

birds died. Without suspecting the cause of the trouble, a quantity of green sprouts was fed to the poultry a short time later, when another batch of the potatoes was taken out of storage and this time twelve chickens died. The use of green potato sprouts as chicken feed was then discontinued and no further trouble of this character was experienced.

Another case of potato poisoning was noted in northern Indiana in which the death of a horse was attributed to eating several tubers that had been allowed to lie on the surface of the ground after digging and which had turned green due to exposure to strong sunlight.



FIG. 3. Green sprouts of the common white potato may develop dangerous quantities of the poisonous alkaloid, solanin.

A short time after Nick Dabsch, who operates a small farm near Anderson, Indiana, threw about a bushel of spoiled potatoes into an acre enclosure in which two yearling heifers were grazing, the animals began to exhibit signs of weakness, the eyes dilated and assumed a fixed stare, the animals began to tremble slightly, the legs spread apart to brace against falling, while a suggestion of froth appeared around the mouth parts. Dr. H. A. Smith, of Anderson, was called on the case but the animals died two days later. A few old sprouted and greened potatoes were all that remained of the original bushel, the remainder having been eaten by the two animals. The trouble was diagnosed by Dr. Smith as potato poisoning.

JIMSON WEED (*Datura stramonium*, L.)

Jimson weed has long been recognized as a poisonous plant and numerous fatal cases of both human and animal poisoning have been attributed to this species. All parts are poisonous, particularly the seeds, containing the poisonous alkaloids *hyoscyamin*, *atropin* and *scopolamin*. An investigation by the Imperial Institute (England) revealed that the alkaloidal content of Jimson varied from .17 per cent in the roots to .48 per cent in the seeds.

An investigation of the death of six cattle on the farm of Judge C. H. Wills, of Kokomo, Indiana, revealed that the animals had



FIG. 4. Jimson weed (*Datura stramonium*.)

grazed on a solid half-acre of Jimson, practically every plant of which had been eaten nearly to the ground. Although animals usually leave Jimson untouched, due to the rank odor and unpalatable flavor, the attending veterinarian in this case suggested the possibility that the animals had developed depraved appetites due to abnormal feeding conditions. One of the most prominent symptoms exhibited by the animals was dilation of the pupils of the eyes.

C. A. Barhite, of Lowell, Indiana, lost two hogs under circumstances that pointed to Jimson sprouts as the cause of the trouble.

Convulsive twitching of the entire body seemed to be the most prominent symptom. Charles Unger, of Anderson, Indiana, lost six cows under circumstances that indicated Jimson poisoning from eating the mature tops. The animals developed scours, the eyes became dilated and the joints stiffened several hours before death.

A number of other cases of Jimson poisoning have been investigated in Indiana. In one instance nearly a quart of Jimson seeds was removed from the digestive tract of a cow that died after eating silage containing a large amount of mature Jimson plants. Cases of Jimson poisoning due to grazing on the young plants have also been reported by the United States Department of Agriculture and the Colorado Station.

MATRIMONY VINE (*Lycium halimifolium*, Mill.)

A few days after C. W. Hollingsworth, of Russiaville, Indiana, turned five calves into an enclosure around an abandoned house surrounded by a profusion of matrimony vines, three of the animals exhibited symptoms of cerebral disturbance and died after convulsions. The only toxic plant in the enclosure was the matrimony vine which had been heavily grazed, at least twenty pounds of the foliage having been eaten.

On the farm of O. J. Lesh, of Flora, Indiana, eight sheep died under almost exactly similar circumstances, having partaken heavily of matrimony vine, in an old-fashioned garden. Two of the animals were posted by Dr. R. A. Craig, of the Veterinary Department of the Purdue University Agricultural Experiment Station, who stated that they showed the worst cases of enteritis he had ever seen.

From these and other cases of plant poisoning noted in Indiana, it is safe to conclude that garden ornamentals are not fit food for grazing animals, since many of these species are apt to prove dangerous.

SUMMARY

The results of chemical analyses and experimental work have shown that a number of members of the plant family *Solanaceae*, or nightshade family, may develop poisonous properties. This paper gives the results of field work involving stock losses under circumstances that indicated toxic solanaceous species to have been responsible.

REFERENCE

¹Gribel, C.: Solaninreiche gesundheitsschädliche Kartoffeln. Zeitschr. Untersuch. Nahrungs- Genussmittel, xlv, pp. 175-183.

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CLINICAL AND CASE REPORTS

(Practitioners and others are invited to contribute to this department reports of unusual and interesting cases which may be helpful to others in the profession.)

TWO HELPFUL SUGGESTIONS

By GERRY B. SCHNELLE, *Boston, Mass.*

Angell Memorial Animal Hospital

The following information is incorporated in a leaflet prepared by the veterinary staff of the Angell Memorial Animal Hospital, which speaks largely for itself. Many cases of canine distemper are presented for treatment and a copy of the leaflet is given to the owner of the patient in each case. The leaflet helps the owner to remember certain fundamental rules for the successful handling of distemper cases and, at the same time, considerable time is saved the veterinarian.

Your dog has distemper, a febrile disease, contagious among dogs.

Keep it quiet.

Keep it at an even, warm temperature.

Do not bathe or allow your dog to get wet.

Feed often—four times a day—with small quantities of easily digested nourishing foods, as milk, raw eggs, raw beef, and shredded wheat soaked in beef broth, with variations as advised by your veterinarian.

Bathe the eyes with boric acid solution and keep the nose free from accumulated discharge.

Brush and comb it daily.

Do not give worm medicines or other drugs unless so advised and follow closely other treatment prescribed by your veterinarian.

Another thing which we have found to be very useful and at the same time easy to administer, a direct steal from the medical profession, by the way, is the following prescription:

R

Quininae sulphatis	gr. ss
Mentholis	gr. ii
Camphorae	gr. ii
Olei petrolati	q. s. ʒi

S.—Apply up the nostrils with a dropper t. i. d.

As a help in nursing, this prescription gives much comfort to the dog. Very few, if any, object to its application and, if it increases the comfort of the patient, it surely helps us to win in the fight against the disease. I am sending these suggestions

with the feeling that they are so general that they are above criticism. Veterinarians should feel free to adopt either or both suggestions without any hesitation.

AN EMERGENCY "GLUCOSE" TREATMENT FOR MILK FEVER

By JOHN PATTERSON, Hedrick, Iowa

The patient in this case was a grade Jersey cow, about six years old, in good flesh and a heavy milk-producer. On the morning of March 12, she delivered a nice heifer calf and was about the premises all day. The next morning, which was Sunday, the owner found her down with milk fever. She received the usual air treatment and was up walking around in about two hours. She paid some attention to the calf, but refused both feed and water during the entire day.

On Monday morning she was down again and unable to move. General symptoms worse than on the previous morning. She again received the air treatment and a half-grain of strychnin hypodermically. In about two hours she was back on her feet again, had a little appetite for food and water during the day but apparently never reached the fully-recovered stage, as seen in the majority of cows treated under similar conditions. In the evening of this day the owner drenched the cow with one and one-half pounds of Epsom salt.

On Tuesday morning she went down again, for the third time in that many days. The symptoms progressed more rapidly than at any other time, or more rapidly than is the rule in all cows. Apparently, something more than the inflation of the udder was going to be necessary if the cow was to live.

Wishing for glucose did not make it materialize. Faintly remembering our organic chemistry of some fifteen or more years ago, we procured a pint can of white corn syrup at the corner grocery. This was well mixed with 1500 cc of previously-boiled well water. Injection was made into the mammary vein, using a 30-cc serum-syringe, with the small hose and two-way stopcock. About fifteen minutes was the time taken to make the injection. A two-inch piece of small rubber tubing was used to connect the needle with the stopcock, in order to make it flexible. The solution was kept at body temperature during the whole time. The udder was again inflated and the strychnin repeated. The rectum was emptied by the hand and the use of an in-

jection-hose. As the writer has often noticed before, these retained feces were covered with clots of blood. This is noticed in animals where the feces are passed without assistance.

There were absolutely no bad effects noticed from this treatment. In fact the cow was on her feet in less than an hour afterward and made an uneventful recovery. We do not recommend the use of corn syrup in the place of chemically pure glucose, but do recommend its use in cases where the other product is not available and where an owner is about to lose a valuable cow, because she does not respond to the accepted line of treatment. Neither is this more "Use Iowa Corn" propaganda.

HEMORRHAGE OF THE PALATINE ARTERY

By WM. P. FERGUSON Grenada Miss.

There is nothing remarkable about this case, except the unusual way in which it happened and the profuse hemorrhage that followed.

On November 22, 1926, at 5:30 p.m., I received a hurry-up call over the 'phone to come to a small farm, two miles from my office, to see a horse, said to have been hooked by a cow and to be bleeding to death.

I arrived at the place of the accident in about five minutes from the time of receiving the call, to find a sorrel gelding, twelve years old, weight twelve hundred pounds, gentle, but disposed to be mean when things did not go to suit him. The animal was bleeding so profusely from the mouth that the back lot was almost covered with blood and the blood still spurting. It seemed rather strange that the horse could be as strong as he appeared to be, after losing so much blood. It was night and as the mouth was very bloody and the horse constantly throwing his head up and down, I could not tell just what part of the mouth was hurt or the extent of the wound.

Knowing, however, that such a hemorrhage would not likely be from any part of the mouth except the palatine artery, and remembering the suggestion made by one of the instructors at the Chicago Veterinary College as to the best way to control such hemorrhages, my first thought was to close the horse's mouth, but the hemorrhage was so great that I did not think it could be stopped without first saturating the wound or applying a bandage. So, in the absence of sufficient help for restrain-

ing the animal and as there was no time to lose in getting the horse to the hospital, I tried packing the wound with oakum and putting on a bandage, but the horse would not stand still long enough for that. Not having a halter, I made one of rope and put it on the horse, closing the mouth by tying the jaws with a cotton string that I happened to have in the car.

This stopped the hemorrhage at once, but it did not stop the horse from trying to get the string and halter off. To be on the safe side, I tied the rascal to the ceiling in the stall, so that he could not rub his head or mouth, hobbled the front feet so he could not paw, and left instructions for the horse to stay as tied for twenty-four hours. The hobbles and halter were to be taken off after that time and the horse fed soft food for two or three days.

The horse made a good recovery without any further treatment. While working to stop the hemorrhage, the old negro man, who was assisting me, said that when the accident happened he had just fed the cow on the opposite side of a wire fence from the horse. He had placed the feed in a trough, close up to the fence, when the horse walked up and reached his head over the fence to eat with the cow. She was not disposed to divide her supper and hooked the horse in the mouth, which caused the hemorrhage. The next day the cow lost her best weapons of defense. This being my first patient with a hemorrhage of the palatine artery, in a practice of more than twenty-five years, I thought it might be of some interest to my fellow-practitioners.

THE THERAPEUTIC VALUE OF PROFLAVINE AND ACRIFLAVINE IN THE CARRIER STATE IN BANG'S ABORTION DISEASE OF CATTLE*

(A report of two cases treated)

By I. FOREST HUDDLESON, *East Lansing, Mich.*

Michigan Agricultural Experiment Station

From time to time this Station has made serious attempts to study the effect of chemotherapeutic agents on the viability of *Brucella abortus* both *in vitro* and *in vivo*, especially those chemicals which have been proved to be effective in destroying the viability of certain pathogenic bacteria and protozoa *in vitro*

*Received for publication, April 5, 1927. Published with the permission of the Director of the Station.

and to be more or less effective *in vivo*. Chemical agents such as neosalvarsan, mercuric iodid and collargol have been studied and while they are highly destructive to the organism in question in the test-tube, they apparently do not affect the viability of *Br. abortus* in the tissues of the cow when administered by the intravenous route.

In September, 1925, an opportunity presented itself to determine whether proflavine influenced the *Br. abortus* flora of the udder of a cow.

The animal selected for the experiment was a grade Holstein, nine years of age. She expelled a seven-months fetus, November 7, 1922. The fetal membranes were retained. She was again bred, the gestation terminating at 8½ months. The fetal membranes were again retained and an endometritis followed. *Br. abortus* was recovered from the fourth stomachs of both feti, the fetal membranes, and all quarters of the udder, as well. The animal gave birth to normal heifer calves, May 30, 1925, and Sept. 1, 1926. The fetal membranes were not retained nor was *Br. abortus* found present in them. The organism was still present in all quarters of the udder and, in addition, following the 1925 parturition, streptococci (type alpha) were constantly found present.

The total daily output of milk from the udder of this animal has never been large since the first abortion, due possibly to the extent of the milk-producing tissue involved in the disease.

On Sept. 1, 1925, at 11 a. m., the animal received an intravenous injection of 300 cc of a 1-200 solution of proflavine. There was no clinical evidence of a reaction following the injection. At 4:30 p. m. on the same day and 8 a. m. on the following day, milk samples were collected from all quarters and examined for the presence of *Br. abortus* and streptococci. The bacteriological examinations showed no changes in the microflora of the udder.

Again, on Sept. 10, 1925, at 1 p. m., a second injection of the same size was given. No clinical reaction followed. A bacteriological examination of the milk from the udder on the following day and at various intervals up to January, 1927, when the animal was slaughtered, showed no change in the bacterial flora present before the injections were given.

In October, 1926, Edwards and Coffman,¹ of the Georgia Experiment Station, reported what appeared to them to be very

promising results from the treatment of cows infected with *Br. abortus*, with intravenous injections of acriflavine.

The animals used in their experiment had previously aborted and were reacting to the agglutination test in dilutions varying from 1-50 to 1-500. No evidence is presented to show whether they were eliminating *Br. abortus* in the milk.

Their animals were divided into groups and given three successive intravenous injections of acriflavine; the dilution and amount varied with each group. One year after the injections were given they found the agglutinating power of the blood of all animals considerably reduced, but none was free from infection as determined by injecting milk into guinea pigs.

The results obtained from the use of acriflavine by Edwards and Coffman were of such a striking nature that the writer was led to a study of this agent with the same idea in view.

A three-year-old grade Shorthorn was available for the experiment. This animal expelled a seven-months fetus, Nov. 3, 1926, following the ingestion of a virulent living culture of *Br. abortus*. The fetal membranes were not retained, but most of the placental areas were necrotic. The organism in question was obtained in cultures made from the fourth stomach of the fetus, the fetal membranes, and the colostrum from all quarters of the udder. *Br. abortus* became established in all quarters and was repeatedly cultured therefrom before the cow was given the acriflavine treatments. On Nov. 15, 1926, at 4:30 p. m., an intravenous injection of 200 cc of a 1-200 solution of acriflavine was given. No symptomatic reaction followed. Milk from all quarters was cultured on Nov. 17 and 22. There was no reduction in the *Br. abortus* flora. November 22, at 4 p. m., a second injection of the same amount and dilution of acriflavine was given.

A bacteriological examination of the milk on Nov. 24 and 29 showed no change in the flora.

November 29, at 4 p. m., a third injection of the same amount and dilution was given. The milk was again examined for the presence of *Br. abortus* on Dec. 7 and at weekly intervals to March 15, 1927, without any noticeable reduction in the number present.

The blood-serum and milk agglutinated *Br. abortus* in a 1-1000 dilution before the treatments were given. The same titer remains after treatment.

The results of the two foregoing experiments are conclusive in demonstrating that in neither case was the *Br. abortus* flora

of the udder reduced in the slightest degree as a result of successive intravenous injections of 200 cubic centimeters of a 1-200 solution of either proflavine or acriflavine.

REFERENCE

¹Edwards, F. R., and Coffman, J. H.: A Promising Treatment for Infectious Abortion. Press Bulletin 252, Georgia Experiment Station, 1926.

INTERNAL REMEDIES USELESS AGAINST EXTERNAL PARASITES

In the quest for simple means of repelling or destroying external parasites of animals, many laymen have come to put false faith in claims for internal remedies. So numerous and usually so worthless have the claims been, when subjected to scientific test, that the Bureau of Animal Industry, United States Department of Agriculture, has issued a statement entitled, "Inefficiency of Substances Fed to Animals to Repel or Destroy External Parasites."

About twenty-five years ago the Bureau carried out experiments in feeding sulphur to cattle or giving them water with sulphur or sulphur compound, to ascertain whether such procedure had any effect on external parasites. No effect was ever observed. Similar tests were tried with sheep, as far back as 1903, to ascertain any effect on sheep scab. The investigators found that internal remedies were useless.

At various times the Bureau has received claims that certain drugs given to animals internally will protect the animals from flies. The Bureau of Entomology likewise has tested products recommended for chickens, in their feed or drinking water, to control lice, mites and other parasites. The results of such tests have been uniformly negative.

In view of the many dips and other effective preparations that will control external parasites when applied to animals externally, much cruelty may be avoided and best results obtained at least cost by using only tested and proved methods. The general rule is: External remedies for external parasites, and internal remedies, under proper prescription and use, for internal parasites, most of which are worms. In the use of chemicals and drugs, it is best to *obtain the services of a trained veterinarian* or other person having scientific knowledge of the products used.

REVIEWS

TIERHEILKUNDE UND TIERZUCHT, EINE ENZYKLOPADIE DER PRAKTISCHEN NUTZTIERKUNDE (Veterinary Science and Animal Husbandry). Valentine Stang and David Wirth. Urban and Schwarzenberg, Berlin N. 24 and Vienna 1, 1926.

In the preparation of this encyclopedia the authors are being assisted by more than 120 specialists in veterinary science and animal husbandry. There will be about eight volumes of approximately 850 pages each. The encyclopedia will appear in monthly issues of about 160 pages, at the price of 6.60 marks each. Leather-back covers will be furnished with every fifth issue. Single issues or volumes cannot be obtained. The buying of one issue or volume obliges the purchaser to take the whole publication. In the first issue there are 109 illustrations, one of which is a colored plate.

This will be the most comprehensive publication, dealing with veterinary science and animal husbandry, that has ever appeared and should prove of inestimable value to teachers, investigators and students.

H. J. S.

DIE STAUPE DES HUNDES UND IHRE BEHANDLUNG (Dog Distemper and Its Treatment). Hans Schroder, First Assistant, Small Animal Clinic, Veterinary College, Berlin. Gebr. Bischoff, Wittenberge (Bez. Potsd.), 1925.

In this convenient book of 167 pages the author has summarized the literature, of all countries and ages, dealing with dog distemper and its treatment. The appended bibliography is complete, one should judge, since 656 references are given. Aristotle is the first author referred to.

H. J. S.

MORPHOLOGISCHE, SYSTEMATISCHE UND ENTWICKLUNGS-GESCHICHTLICHE UNTERSUCHUNGEN AN ARTEN DES GENUS *SANGUINICOLA* PLEHN (Morphological, Systematical and Embryological Investigations on Species of the Genus *Sanguinicola*, Plehn). Leopold Ejsmont Gracovie, Poland, 1926.

This is an exhaustive and well illustrated memoir on various species of the Genus *Sanguinicola*, Plehn.

H. J. S.

ABSTRACTS

STUDIES IN DOG-DISTEMPER I. DOG-DISTEMPER IN THE FERRET.

G. W. Dunkin and P. P. Laidlaw. Jour. Comp. Path. & Ther., xxxix (1926), pp. 201-212

The extreme infectivity and variable severity of dog distemper have rendered experimental work on the disease very difficult; moreover, the securing of a supply of healthy animals of known susceptibility to distemper infection has always been a problem. The authors found these difficulties largely obviated by the use of ferrets which have been found to be very susceptible to the infection and with the further great advantage that ferrets, when infected with dog distemper, regularly suffer from an acute disease which is characteristic and readily diagnosed.

Elaborate precautions were observed in raising a clean stock of young ferrets never exposed to distemper infection; these precautions included the provision of a special building for breeding, a routine which excluded accidental infection, an experiment house divided into cubicles designed to confine experimental infection to limited quarters and an antiseptic ritual in observing and caring for the experiment animals which would seem to satisfy all requirements. In addition, a special type of cage for housing the ferrets was employed which helped also to avoid accidental infection.

Dog distemper in the ferret: The disease can be transmitted from dogs to ferrets and back again from ferrets to dogs, by a variety of means, at will. Minute quantities (0.02 cc of blood or 0.0001 gm. of spleen) from an infected ferret induces disease in a healthy ferret when injected subcutaneously. Contact between sick and normal ferrets for a short time quite certainly causes infection of the latter, especially when the contact takes place in the earlier stages of the disease; the secretions and excretions of sick ferrets also were found infective and the authors also cite experiments to show that infection by way of the air "can and does occur over short distances," although it is stated that this is probably not the usual mode of infection in the natural disease.

Dog distemper in the ferret is described as an acute infectious fever, with an incubation period of ten days (compared with four days in the dog), a coryza at the onset, and the formation

of vesicles and pustules around the mouth. Nerve symptoms due to an acute encephalitis develop in a small proportion of cases. The mortality in ferrets is high. The symptoms of the disease in ferrets begin with a watery appearance of the eyes which rapidly increases, the eyelids becoming swollen; a catarrhal rhinitis is common; the skin of the chin becomes flushed and the pads of the feet and the skin of the lower abdomen become injected. After twenty-four hours, the discharge from the eyes and nose is purulent and the eyelids are puffy. Minute vesicles appear on the chin at the junction of naked skin and fur; the feet are swollen, pink, moist and sweating. The animals refuse all food. All these manifestations of disease become increasingly and rapidly more severe and, by the fourth day, weakness has developed to a marked degree; on the fifth day, the animal is usually moribund, and usually succumbs although occasionally improvement occurs and a rapid recovery results. The mortality of dog distemper in ferrets is believed to be over ninety per cent.

The temperature is raised to 105° F. or more, but little reliance is placed on these records in ferrets as a normal animal may give a reading of 103° F. and handling readily increases the temperature one or two degrees.

A ferret that recovers proves to be immune to further infection; massive doses of virus may then be given with impunity.

Gross pathology: Little can be found at autopsy apart from what can be noted on physical examination. The skin of the lips is riddled with pus pockets and the skin of the abdomen may also show pustules. The pericardium may show an excess of clear fluid. Liver, kidneys and suprarenals present no abnormality; the spleen is larger than normal. In only a small proportion of autopsies was pneumonia observed, usually of the broncho-pneumonic type. The authors regard the pneumonia and abscesses as due to secondary invaders that have nothing to do with distemper primarily.

Attempts to cultivate organisms from the heart-blood of a large proportion of ferrets coming to necropsy were almost invariably negative, although again and again heart-blood proved to be infective when given in small doses to clean animals.

The authors base the preceding description of dog distemper in the ferret on results of work with six strains of distemper virus on more than two hundred ferrets; all strains except two were secured from instances of disease in dogs regarded as typical

examples of dog distemper; all strains gave rise to a similar disease which ran a uniform course in ferrets. The original strain has been studied most intensively but the five other strains have been found to cross-immunize with the original.

To prove that the disease studied was genuine dog distemper and a single entity, the authors cite cases of transference of the disease from ferrets to dogs with resulting production of undoubted dog distemper.

STUDIES IN DOG-DISTEMPER II. Experimental Distemper in the Dog. G. W. Dunkin and P. P. Laidlaw. *Ibid.*, xxxix (1926), pp. 213-221.

While certain phases of the authors' work on experimental distemper were satisfactorily accomplished by the use of ferrets, it was realized that the critical tests must be confirmed with dogs. This necessitated, first, a continuous supply of dogs of known susceptibility and, secondly, a means of limiting the infection to experiment animals. The authors described the special quarters used for the rearing of a clean stock of puppies and the special aseptic and antiseptic routine adopted to insure the control of the infection.

The system was found to be satisfactory in so far as a control dog was kept for over six months in one cage kennel while experiments were being carried on in adjacent cages. Throughout this time, the control dog's temperature remained normal and, at the end, he was found to be sensitive to a single dose of weak distemper virus, thus proving his susceptibility.

It is agreed that the variable symptomatology of canine distemper is due, in part, to mixed infections and that the secondary invaders are responsible for much in the sum total of the disease; but it is not agreed to what extent the secondary invaders complicate the disease or modify its final issue, nor what are the essentials of an uncomplicated attack of distemper. The naturally occurring disease is spread by contact between diseased and healthy dogs, and there is thus opportunity for the secondary infection being passed at the same time. It thus comes about that dog distemper as seen by the veterinarian is usually a complex. When, however, distemper is studied in a series of susceptible animals and each patient is rigidly isolated, the secondary infections should die out and the specific disease breed true.

Accordingly, Dunkin and Laidlaw expected that experimental distemper would not reproduce in detail all the features met with

in the natural disease. This was found to be the case and they therefore give a description of the experimentally-produced disease which they believed from their experiments to be the true disease and a single entity, i. e., they found no evidence of several diseases being confused.

Dog distemper (experimental), as studied by the authors, is an acute infectious fever characterized by an incubation period of four days, a coryza at the onset, an unusual temperature curve, severe gastro-intestinal disturbance and a variable set of symptoms due to inflammation in the respiratory systems; nerve symptoms are seen in a small proportion of cases. The incubation period is very constant, regardless of the size of the inoculating dose of virus or its method of administration.

The onset of the disease is defined by fever and a watery conjunctivitis and rhinitis. Within twenty-four hours, the discharge has become faintly purulent and the conjunctiva congested; these symptoms may continue but usually disappear within a week. The temperature curve is regarded as important; there is usually an abrupt rise, at the start, to 105° F. or more, remaining at about that level for one or two days and then subsiding to near normal. Within another two days, a secondary fever period begins and is usually slower and more prolonged. The authors assert that the disease is very highly infectious in these early stages and yet the diseased animals present few if any symptoms if the temperature curve has not been followed constantly.

At the onset, most dogs vomit and refuse food; appetite may return temporarily with the drop in fever but again diminishes with the second febrile period. In practically every case, there is diarrhea throughout the illness, the stools in the later stages becoming profuse, slimy, offensive in odor and sometimes blood-streaked. These factors cause a rapid falling-off in the animal's condition.

Respiratory symptoms are usually slight in experimental cases. A slight cough may appear in the second fever period but only two cases of real respiratory distress were seen in seventy experiments. However, in all necropsies on dogs killed in high-fever periods, there were signs of mild bronchitis and small patches of early broncho-pneumonia. Frank or extensive broncho-pneumonia was expected to be common but was not found in the experimental cases and is therefore regarded as due to secondary infection when it does occur.

Nerve symptoms, including chorea, fits and epileptiform seizures, occurred in only about ten per cent of the cases, and were found always to be of serious import.

Pathology of experimental distemper: Nothing especially characteristic was found either grossly or microscopically. Empyema, broncho-pneumonia and purulent bronchitis, all of which are seen so commonly in the spontaneous disease, were never seen, and this convinced the authors that these features are complications and due to secondary agents, in fact, that genuine distemper may be passed from dog to dog, from ferret to ferret, or from ferret to dog, through a long series of animals and a suppurative lesion may never be seen except for the superficial abscesses in the ferrets and purulent conjunctivitis in the dogs. Corresponding with the absence of complications, Dunkin and Laidlaw have found dog distemper to be a disease with a low mortality rate. Some cases are overcome by the infection but, on the whole, the prognosis in cases due to the virus alone is good.

In view of all these facts, the authors regard experimental canine distemper as an acute infectious fever which may cause serious bodily disturbance but is rarely fatal; and yet a disease which is very liable to light up a latent infection and give access to secondary infections of various kinds.

STUDIES IN DOG-DISTEMPER III. The Nature of the Virus. P. P. Laidlaw and G. W. Dunkin. *Ibid.*, xxxix (1926), pp. 222-230.

In their third report on canine distemper, the authors briefly review the evidence that has been submitted in the more recent investigations of the disease to support the two contending views as to etiology, that is, the bacillary conception and the ultra-microscopic-organism conception. Having begun the work with open minds as far as these contentions regarding the nature of the causative agent of distemper were concerned, the authors state that their attention was finally centered on the filtrable-virus conception for two reasons: first, because repeated experiments showed that it was possible to transmit the disease with material from which no cultures of visible bacteria could be secured and, second, because filtration experiments showed that material passed through tested bacterial filters was still infective but sterile on culture media.

Blood cultures: Although the blood of ferrets sick with distemper is very infective, especially during the first four days of

the disease, yet this blood was sterile in the vast majority of cases even though inoculated on various types of media and incubated both aerobically and anaerobically. In a few cases, a *Staphylococcus albus* was present but was regarded as a contaminant and proved innocuous on injection into ferrets. It is noteworthy that *B. bronchisepticus* was never encountered in blood cultures.

Serum cultures: Serum from distemper-infected ferrets and dogs proved infective for susceptible animals but never gave any growth of bacterial organisms even though a wide variety of culture media was employed.

Spleen cultures: The spleen of ferrets sick with dog distemper has proved to be a rich source of material capable of infecting healthy animals. Many spleens were subjected to culture. A high proportion of them gave growths of *Staphylococcus albus* on prolonged incubation. They were apparently the same as those found in the small abscesses about the mouth and were thought to have gained entrance to the body at that point and were therefore not considered as contaminants.* *Bacillus bronchisepticus* was never encountered in the spleen cultures.

Filtration experiments: Various methods were employed to test the filtrability of the virus and it was found that, under suitable conditions, the infective agent would pass diatomaceous-earth candles, unglazed earthenware filters and membrane filters with small pores. Attempts to demonstrate a filtrable virus in the blood, serum and pericardial fluid of dogs and ferrets, and in the nasal discharge of infected dogs, failed, and are thus opposed to the observations of Carré but accord with those of Kregenow. However, finely ground ferret spleen from infected cases repeatedly yielded virulent, bacteria-free filtrates capable of producing typical distemper. It seemed apparent, however, that the virus was filtered only with difficulty, and that much of the infective agent is held up in the filters; the latter was proven by the fact that larger doses of filtered material were necessary to induce disease than of unfiltered material.

Attempts to cultivate the virus: As stated earlier, attempts to cultivate organisms with regularity from infective dog's or ferret's blood failed. Any bacteria that appeared in cultures proved non-infective and were obviously contaminants. Appa-

(*Abstractor's note: Another explanation for the presence of these organisms may be had in the reports of those who have isolated somewhat similar micrococci in tissue cultures of various normal body tissues such as muscle and non-specific cocci from cultures of carcinomatous tissues.)

rently sterile cultures were incubated for considerable periods in the hopes that a minute phase of the virus would eventually be recognizable; dark-field examinations were made in an effort to differentiate some structure of the virus; the virus was incubated with cultures of various organisms to attempt a symbiotic development; all these efforts yielded negative results, although it was found that the virus would survive for a time in ordinary culture media.

As a result of their experiments, the authors draw the following conclusions:

1. Dog distemper can be transmitted from dog to dog, from ferret to ferret, or from ferret to dog, by material in which no bacteria can be demonstrated and which yields no growth of organisms in ordinary culture media.
2. The infecting agent can be passed through bacterial filters of standard type and of proven quality.
3. The infecting agent cannot be cultivated in any straightforward manner so far employed.

From these three conclusions it follows that the infecting agent of dog distemper belongs to the class of filter-passing viruses.

J. G. H.

PUBLICATIONS RECEIVED

A Study of the Relative Value of Certain Root Crops and Salmon Oil as Sources of Vitamin A for Poultry. D. E. Davis and J. R. Beach. (Bul. 412, Univ. of Calif., Coll. of Agr., Agr. Exp. Sta., Berkeley, Calif., November, 1926. pp. 15.)

Preventing Disease in Sheep. W. J. Butler. (Bul. 1, Montana Wool Growers' Asso., Helena, Mont., January 19, 1927. pp. 11.)

Nevada, Biennial Report of the State Rabies Commission for 1925-1926, State of. Carson City, Nev., 1927. pp. 9.

Portland, Oregon, Bureau of Health, Annual Report for 1926. pp. 25.

The Control of Bovine Tuberculosis. Veranus A. Moore. Reprint from Proceedings of Nineteenth Annual Convention, International Association of Milk Dealers, October, 1926. pp. 12.

Diseases of Animals Communicable to Man. Veranus A. Moore. Albany, N. Y. Reprint from *American Journal of Public Health*, xvii (1927), 2. pp. 113-120.

On the Occurrence of a Lung Fluke *Paragonimus edwardsi*, n. sp. in a Palm Civet (*Paradoxurus grayi*) in Kumaon Hills. Amarnath Gulati. Calcutta, India. Memoirs of the Department of Agriculture in India, iii (1926), 8. pp. 187-190. Illustrated.

On the Occurrence of Isospora and Balantidium in Cattle. Hugh Cooper and Amarnath Gulati. Calcutta, India. Memoirs of the Department of Agriculture in India, iii (1926), 9. pp. 191-193. Illustrated.

Experiments on the Treatment of Hookworm Infection in Dogs. Amarnath Gulati. Calcutta, India. Memoirs of the Department of Agriculture in India, iii (1926), 7. pp. 167-184.

ARMY VETERINARY SERVICE

CHANGES RELATIVE TO VETERINARY OFFICERS

Regular Army

Each of the following-named officers of the Veterinary Corps is relieved from his present assignment and duty at the station indicated, effective at such time as will enable him to comply with this order, and will proceed at the proper time to Washington, D. C., and report in person to the commandant, Army Veterinary School, Army Medical Center, on August 23, 1927, for duty for the purpose of pursuing a course of instruction:

Captain Clell B. Perkins, Fort Benjamin Harrison, Ind.

Captain Charles O. Grace, Madison Barracks, N. Y.

Captain Floyd C. Sager, Fort Leavenworth, Kansas.

Captain Nathan M. Neate, Jefferson Barracks, Missouri.

Captain Forest L. Holycross is relieved from his present assignment and duty at the San Francisco general intermediate depot, Fort Mason, Cal., effective at the proper time, and will sail on the transport scheduled to leave San Francisco, California, on or about July 2, 1927, for New York City, and on arrival will proceed to Washington, D. C., and report in person to the commandant, Army Veterinary School, Army Medical Center, for duty for the purpose of pursuing a course of instruction.

Reserve Corps

New Acceptances

Howle, Thomas Blake, 1st Lieut., 300 Main St., Oxford, Alabama.

Buck, John Oman, 2nd Lieut., Mendota, Illinois.

Demotion

Decker, Wallace Melvin, 112 Lyle St., Monte Vista, Colorado, from Major to Captain, Vet.-Res., because of National Guard status.

MEDICAL MEN ENTERTAINED

The program for the March meeting of the Ingham County (Michigan) Medical Society was arranged and given by the faculty of the Division of Veterinary Medicine of Michigan State College. As far as known, this is the first time that a veterinary faculty group has presented the entire program for a meeting of medical men. The program follows:

The Influence of Pure Chemical Substances on Nutrition, Prof. Ralph Huston and Mr. D. Lightbody.

Suggested Uses of "Iodine Suspensoid" in Medicine and Surgery, Dr. W. L. Chandler.

Some Notes on Undulant Fever and Its Differential Diagnosis, Dr. I. F. Huddleson.

Placental Diseases, Dr. E. T. Hallman.

Michigan State College and its Curricula in the Medical Sciences, Dr. Ward Giltner.

The meeting was held at the Michigan State College Union Building, East Lansing, March 22, 1927, at 8:00 p.m. The meeting was preceded by a cafeteria dinner at 6:30.

COMMUNICATIONS

WANTS REPORTS PUBLISHED ANNUALLY

TO THE EDITOR:

Your idea in publishing the recent proceedings of the United States Live Stock Sanitary Association is certainly to be commended. Kindly accept my hearty approval of the cooperative spirit and trust it will become an annual feature of the JOURNAL.
Lake Benton, Minn., March 12, 1927.

W. F. HOLMGREN.

WILL INCREASE THE MEMBERSHIP

TO THE EDITOR:

I think the March issue of the JOURNAL is the best ever. By publishing the papers presented at the annual meeting of the American Veterinary Medical Association, together with the papers presented at the annual meeting of the United States Live Stock Sanitary Association, you give valuable information every veterinarian should read, and I believe it will be the means of increasing the membership of our Association, and I for one would like to see this repeated again next year.

G. W. BROWNING.

Mobile, Ala., March 24, 1927.

MARCH ISSUE APPRECIATED

TO THE EDITOR:

The members of the A. V. M. A. connected with this office (State Veterinarian) and with the local office of the U. S. Bureau of Animal Industry, located here, have asked that I write you and express their appreciation of the March JOURNAL, which carried a report of the proceedings of the 30th annual meeting of the U. S. Live Stock Sanitary Association. We are very glad to have copies of the splendid papers presented at that meeting and we hope that this arrangement will be continued in the future.

WM. MOORE,
State Veterinarian of
North Carolina.

Raleigh, N. C., April 8, 1927.

MISCELLANEOUS

IDAHO HAS NEW STATE VETERINARIAN

Dr. A. J. Dickman, of Boise, Idaho, has been appointed Director of the Idaho State Bureau of Animal Industry by Mr. John H. Welch, Commissioner of Agriculture. The appointment of Dr. Dickman, who succeeds Dr. W. C. Nye, became effective April 1, 1927.

Following his graduation from the Kansas City Veterinary College, in 1915, Dr. Dickman entered general practice in Colo-



DR. A. J. DICKMAN

rado. During the war he served as captain in the Veterinary Corps of the A. E. F. In 1920 he re-entered general practice at Caldwell, Idaho, where he remained until 1925, when he was appointed Assistant State Veterinarian. Dr. Dickman holds a commission as captain in the Idaho National Guard and is serving as Regimental Veterinarian for the organization.

The wild life of the field and forest merely thinks it's wild.
It should see the wild life of the city.

WHITE SNAKEROOT EXHIBIT

The accompanying photographs give some idea of a white snakeroot exhibit which was on display in Indianapolis recently, for the purpose of giving farmers and others an opportunity to become acquainted with this plant, growing in its natural environment. In the preparation of the exhibit, real trees and growing plants were used. The exhibit was actually a part of the McCormick woods, located near Lafayette, Indiana, transported to Indianapolis. These woods have had a long and tragic history of grazing animals that have died from trembles (milk-sickness). Several persons have died following ingestion of



FIG. 1. White snakeroot exhibit.

milk from animals that became affected with the disease in these woods.

The exhibit, shown in figure 1, had a frontage of twenty-four feet and was sixteen feet deep. It was framed with lattice work, which was tastefully decorated with artificial flowers, giving it a very attractive appearance. The background was painted by a scene painter and a stream of real water ran through the center. The cow shown in the foreground was made of papier-mache. According to Professor Albert A. Hansen, associate botanist of Purdue University, who supervised the preparation and installation of the exhibit, approximately 200,000 people

had an opportunity to view the exhibit and Professor Hansen believes that it has been a very important means of acquainting



FIG. 2. White snakeroot plant

people with the characteristics of white snakeroot and its potential dangers. Figure 2 shows a single white snakeroot plant that was included in the exhibit.

TREMBOLES AND MILK SICKNESS

The close relation between the disease known as "trembles" in cattle and "milk sickness" of persons has been the subject of scientific investigation for many years. An outbreak of the disease in Illinois caused the death of fifteen persons, according to reports received by the U. S. Department of Agriculture, in October, 1926. Many similar outbreaks have occurred throughout the country and each one recalls the heavy death losses reported among early pioneers from a mysterious disease.

Recent experiments by Dr. James F. Couch, of the Bureau of Animal Industry, have resulted in new information that promises to be beneficial to the public and the live stock industry. The experiments, supplementing those of other investigators, show conclusively that poisonous plants cause trembles

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in cattle, sheep, horses and other animals; also that animals may be poisoned without showing symptoms of trembles; and that milk and butter from cows so poisoned are dangerous to the consumer. The results also explain a condition which observing farmers had been reluctant to believe, namely, that milk sickness among persons may occur in the winter, when the poisonous plants are dormant.

The investigation conducted by the Bureau has brought out the following facts: Two plants are responsible for trembles in live stock. In the East and Central West, the poisonous plant is the richweed, also known as white snakeroot. In Texas and New Mexico, where the animal malady is called "alkali disease," the poisonous plant is the rayless goldenrod. Richweed is a slender plant, from 2 to 4 feet high, with leaves from 3 to 5 inches long, pointed and thin. It is widely distributed in the eastern part of the United States and as far west as Minnesota and Nebraska, and as far south as Louisiana. It is found generally in rich soil in damp woods. Rayless goldenrod, known in some localities as jimmy weed, is a stout, erect, tufted perennial herb, commonly from 1 to 2 feet, but it may grow taller under favorable conditions, as on the banks of irrigating ditches. The leaves are narrow and about 1 to 2 inches long, usually with stout, stiff hairs on the margins.

Animals may be poisoned by the dry richweed plant—such as in hay—in winter, but still not have trembles. This fact is due to the presence of three poisonous substances in richweed, only one of which causes symptoms of trembles in cattle and milk sickness in human beings. This poison, which is a complex alcohol, has been named "tremetol." The other two poisons are a resinous acid and a volatile oil.

The poison of the rayless goldenrod has not been studied so completely, but is known to be dangerous when the plant is either green or dry.

Authentic records of numerous serious illnesses and deaths furnish abundant evidence that the products of poisoned animals are dangerous for human consumption. In some localities doctors have specialized in treating milk sickness and medical reports contain frequent references to the mystery of the disease, and the heavy "fatalities" and "panic" among settlers. Milk and butter from dairy cattle that have consumed either of the plants mentioned are considered gravely dangerous, though a conclusive chain of evidence leading directly to these

products has not yet been established. This fact is due perhaps to the tendency of scientific workers to keep within their respective fields of animal and human pathology.

Even when milk sickness is not fatal to man, there usually follows a long period of illness and reduced vitality. Stock-owners are advised to combat the poisonous plants mentioned by pulling or digging them up wherever found. Especially during the fall, animals should be kept out of pastures infested with the poisonous plants.

As a further means of combating milk sickness and diagnosing suspected cases, Doctor Couch has developed a laboratory test for tremetol. Directions for making the test, which may be performed by laboratory workers, physicians, veterinarians or druggists, will be furnished on application to the Pathological Division of the Bureau of Animal Industry, U. S. Department of Agriculture, Washington, D. C.

A FARMER'S LAMENT

By Dr. W. H. WRIGHT, *Elkton, Md.*

(With Apologies to Walt Mason.)

Poor Farmer Smith is losing hogs—they're dying by the score and Smith is fuming up and down and swearing oaths galore. The neighbors come from far and near to offer sage advice and bring Smith potions, pills and lotions and dope for fleas and lice. Said Farmer Flipp, "It is the pip and I'm the man to cure 'em; just reach around upon my hip and get that aqua purum." Said Neighbor Wise, "I do surmise, the rheumatiz it is; go get a root for each hog's snout and that will do the biz." But lackaday, it's sad to say, the hogs kept right on dying, though Smith in his persistent way kept on trying, trying. "There is no cure for this disease, I am convinced," said he, "so I will knock them in the head and from this thing be free." "It's all my fault, I expect, by heck, for I begin to see that garbage-feeding doesn't pay even though the darn stuff's free." "My brain is nil; I fed that swill; I am an easy mark; but gosh, I wish I'd listened to that man from College Park." "With sayings wise, I will advise, he goes about the State, broadcasting information that will save you from my fate." "Hog cholera, he does insist, if you would but avert, without delay you must desist from feeding uncooked pork."

AMERICAN VETERINARY MEDICAL ASSOCIATION

Financial Report—Dr. M. Jacob, Treasurer

December 31, 1926

Bank balances, December 31, 1925.....	\$ 4,354.31	
Receipts, January 1, 1926, to December 31, 1926, as per statement.....	30,288.46	
	<u>34,642.77</u>	
Expenditures, same period, as per statement.....	27,652.65	
	<u>6,990.12</u>	
Placed on time deposit { Journal Fund.....	\$ 3,000.00	
	Relief Fund (interest).....	9.90
	Schmidt Memorial Fund.....	365.25
	<u>3,375.15</u>	
Amount of cash in checking accounts, December 31, 1926.....		3,614.97
Revolving fund in hands of Dr. Hoskins.....	\$ 500.00	
Loan to Relief Fund.....	100.00	<u>600.00</u>
Amount of cash, exclusive of time deposits.....		4,214.97
Cash on time deposit, December 31, 1925.....	\$10,592.75	
Additional during period, as shown above.....	3,009.90	
	<u>13,602.65</u>	
Total amount now on time deposit.....		13,602.65
Total cash resources.....		<u>17,817.62</u>
Bonds (purchase price).....		<u>25,886.10</u>
Total assets, December 31, 1926.....		43,703.72
Total assets, December 31, 1925.....		<u>41,733.16</u>
Gain for period.....		\$ 1,970.56

DISTRIBUTION OF ASSETS

Fund	Cash	Bonds (Cost)	Time Deposits	Totals
A. V. M. A.....	\$1,626.45	\$13,445.93		\$15,072.38
JOURNAL.....	2,588.52	10,459.91	\$13,000.00	26,048.43
Relief.....		1,980.26	602.65	2,582.91
Totals.....	<u>\$4,214.97</u>	<u>\$25,886.10</u>	<u>\$13,602.65</u>	<u>\$43,703.72</u>

A. V. M. A. FUND

Bank balance, December 31, 1925.....	\$ 1,046.75
Revolving fund in hands of Dr. Hoskins (see 1925 report).....	500.00
Loan to Relief Fund (see 1925 report).....	100.00
Amount borrowed from JOURNAL Fund.....	1,000.00
Receipts during period (as per statement).....	<u>7,157.36</u>
Total.....	9,804.11
Expenditures during period.....	<u>7,802.51</u>
Balance.....	2,001.60
Transfer to Schmidt Memorial Fund.....	\$ 365.25
Time deposit—Relief Fund.....	9.90
	<u>375.15</u>
Balance.....	1,626.45

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Loan to Relief Fund	\$ 100.00	
Revolving fund in hands of Dr. Hoskins	500.00	600.00
Balance, December 31, 1926		\$ 1,026.45
Actual bank balance, December 31, 1926	\$ 1,241.42	
Less checks not cashed	214.97	
Balance		\$ 1,026.45

JOURNAL FUND

Bank balance, December 31, 1925	\$ 3,307.56	
Receipts during period (as per statement)	23,131.10	
Total		26,438.66
Expenditures during period		19,850.14
Balance		6,588.52
Placed on time deposit	\$ 3,000.00	
Loan to A. V. M. A. Fund	1,000.00	4,000.00
Balance, December 31, 1926		\$ 2,588.52
Actual bank balance, December 31, 1926	\$ 3,318.12	
Less checks not cashed	729.60	
Balance		\$ 2,588.52

SCHMIDT MEMORIAL FUND

Received and placed on time deposit during period	\$ 365.25
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SALMON MEMORIAL FUND

Time deposit, December 31, 1925	\$ 4,220.67	
Liberty bond (face value)	500.00	
		4,720.67
Receipts:		
Interest on time deposit	\$ 177.84	
Interest on bond	21.25	
Interest on loans	54.00	
Loans repaid	900.00	1,153.09
Total assets		\$ 5,873.76

RELIEF FUND

Bank balance, December 31, 1925	\$ 592.75	
Interest during period	9.90	
Total cash		\$ 602.65

BOND RECAPITULATION

Fund	Par	Cost
Association	\$14,000.00	\$13,445.93
Journal	11,000.00	10,459.91
Relief	2,000.00	1,980.26
	\$27,000.00	\$25,886.10

EMBLEMS

Included in receipts credited to the A. V. M. A. Fund is \$261.20, derived from sale of emblems during the year of 1926.

RECEIPTS FROM SECRETARY

January 1 to December 31, 1926

Monthly Receipts—Dr. H. P. Hoskins (A. V. M. A. and Journal Fund)

1926	
Jan. 18.	\$ 3,142.37
Feb. 18.	3,066.10
Mar. 18.	3,409.45
Apr. 17.	2,660.38
May 18.	2,005.99
June 18.	1,892.55
July 18.	1,789.74
Aug. 26.	1,336.17
Sept. 18.	1,723.78
Oct. 16.	922.77
Nov. 18.	1,366.23
Dec. 17.	4,872.62
Dec. 7	Loan to Salmon Memorial Fund repaid..... 300.00

INTEREST

Apr. 15	Time deposits—Journal Fund.....	\$ 116.66
Apr. 15	Time deposits—Relief Fund.....	9.90
Dec. 31	Time deposits—Journal Fund.....	326.65
Apr. 20	Bonds—Journal Fund.....	298.10
Apr. 20	Bonds—A. V. M. A. Fund.....	298.10
Apr. 23	Bonds—Relief Fund.....	50.00
Aug. 4	Bonds—A. V. M. A. Fund.....	106.87
Aug. 4	Bonds—Journal Fund.....	106.88
Aug. 4	Bonds—Relief Fund.....	50.00
Oct. 15	Bonds—A. V. M. A. Fund.....	201.91
Oct. 15	Bonds—Journal Fund.....	201.91
Oct. 15	Bonds—Relief Fund.....	33.33

Total receipts.....\$30,288.46

DISBURSEMENTS

January 1 to December 31, 1926

A. V. M. A. FUND

1925			
December	26	K. C. V. C. Alumni Asso., advertising	\$ 10.00
December	26	Dr. H. P. Hoskins, postage	105.14
December	26	Friesema Bros. Printing Co., printing	12.00
December	26	Una Anderson, salary for December	100.00
1926			
January	13	Schiffer Printing Co., printing	76.00
January	13	Book Building, Inc., rent for January	118.00
January	13	Lyford M. Moore, premium on Secretary's bond	25.00
January	13	Dr. John W. Adams, expenses attending Missouri meeting	50.00
January	29	Una Anderson, salary from December 24 to January 31	133.33
January	29	Dr. H. P. Hoskins, salary for January	416.67
January	29	Dr. H. P. Hoskins, postage	41.99
February	15	Horse Association of America, dues	50.00
February	15	Dr. H. P. Hoskins, expenses attending meetings	156.37
February	20	Dr. H. P. Hoskins, miscellaneous petty expenses	37.40
March	9	G. H. Smith, auditing records of Treasurer	5.00
March	9	Una Anderson, salary for February	110.00
March	18	Book Building, Inc., rent for March	118.00
March	26	Jewel Emblem & Mfg. Co., radiator plates	67.97
March	30	K. C. V. C. Alumni Asso., advertising	10.00
March	30	Una Anderson, salary for March	110.00

March	30	Dr. H. P. Hoskins, salary for March.....	416.67
March	30	Dr. H. P. Hoskins, miscellaneous petty expenses.....	44.90
March	30	Bailey, Banks & Biddle Co., 1926 Hoskins Medal....	27.00
April	14	Dr. H. P. Hoskins, postage.....	41.54
April	27	Schiffer Printing Co., Stationery.....	64.40
April	27	Una Anderson, salary for April.....	110.00
May	10	Book Building, Inc., rent for May.....	118.00
May	10	Schiffer Printing Co., stationery.....	60.95
May	10	Dr. H. P. Hoskins, postage.....	43.43
June	2	Dr. Hoskins, salary for May.....	416.67
June	2	Una Anderson, salary for May.....	110.00
June	7	Dr. H. P. Hoskins, expenses attending meetings.....	60.58
June	7	Dr. H. P. Hoskins, miscellaneous petty expenses.....	27.36
June	28	Una Anderson, salary for June.....	110.00
June	28	Dr. Harrison J. Seaman, 1st prize in essay contest....	50.00
June	28	Dr. H. F. Wilder, 2nd prize in essay contest.....	25.00
June	28	K. C. V. C. Alumni Asso., advertising.....	10.00
July	6	Friesema Bros. Printing Co., printing.....	42.50
July	6	Schiffer Printing Co., printing.....	68.55
July	18	Book Building, Inc., rent for July.....	118.00
July	29	Dr. John W. Adams, expenses attending N. C. State Vet. Asso. meeting.....	47.84
July	29	Dr. H. P. Hoskins, salary for July.....	416.67
July	29	Una Anderson, salary for July.....	110.00
July	29	Dr. H. P. Hoskins, postage.....	84.38
August	14	Dr. H. P. Hoskins, miscellaneous petty expenses.....	22.79
August	14	Frank McElroy, auditing records of Secretary.....	30.00
August	14	Dr. H. P. Hoskins, expenses attending meetings.....	94.50
August	30	Dr. L. W. Goss, postage, Resident State Secretary....	2.25
August	30	Una Anderson, salary for August.....	110.00
September	9	Schiffer Printing Co., stationery.....	130.00
September	9	Kentucky Vet. Med. Asso., expenses A. V. M. A. Convention.....	65.00
September	9	Dr. Alfred Hendrickson, refund application fee.....	4.50
September	9	Dr. John W. Adams, expenses attending Indiana Vet. Med. Asso. meeting.....	53.33
September	9	Una Anderson, convention expenses.....	66.34
September	9	Dr. C. E. Cotton, expenses Engels investigation, Com. on Tuberculosis.....	30.13
September	9	Dr. H. P. Hoskins, convention expenses.....	91.24
September	9	Dr. H. P. Hoskins, postage.....	39.59
September	9	Book Building, Inc., rent for September.....	118.00
September	25	Master Reporting Co., reporting convention.....	265.03
September	25	Dr. J. C. Flynn, expenses, stenographer and postage..	12.50
September	25	Dr. F. R. Whipple, expenses, stenographer and postage	10.00
September	25	Dr. M. Jacob, postage.....	2.10
September	25	Schiffer Printing Co., stationery.....	60.60
September	25	T. A. Falconnier, examining records of Treasurer.....	5.00
September	25	Dr. M. Jacob, convention expenses.....	36.50
September	25	Dr. H. P. Hoskins, salary for September.....	416.67
September	25	Una Anderson, salary for September.....	110.00
September	25	K. C. V. C. Alumni Asso., advertising.....	10.00
October	11	Journal of the A. V. M. A., subscriptions for honorary members.....	102.00
October	30	Una Anderson, salary for October.....	110.00
October	30	National Asso. of B. A. I. Veterinarians, advertising..	15.00
October	30	Dr. W. G. Brock, convention photos.....	8.75
October	30	Dr. H. P. Hoskins, postage.....	100.30
November	18	Book Building, Inc., rent for November.....	118.00
November	18	H. H. Battles, flowers, Dr. John W. Adams.....	15.00
November	18	Dr. H. P. Hoskins, miscellaneous petty expenses.....	30.20
November	18	Dr. T. A. Sigler, expenses attending meetings.....	22.49
November	18	Dr. H. P. Hoskins, expenses attending meetings.....	77.09

November 27	Dr. T. A. Sigler, expenses attending meetings.....	75.74
November 27	Dr. H. P. Hoskins, salary for November.....	416.67
November 27	Una Anderson, salary for November.....	110.00
December 18	Schiffer Printing Co., stationery.....	63.75
December 18	K. C. V. C. Alumni Asso., advertising.....	10.00
December 18	Dr. H. P. Hoskins, expenses attending Chicago meeting.....	48.97
December 29	Jewel Emblem & Mfg. Co., radiator plates.....	69.10
December 29	Dr. T. A. Sigler, expenses attending Chicago meeting.....	35.87
December 29	Prof. Franz Benesch, expenses to A. V. M. A. convention.....	100.00
December 29	Una Anderson, salary for December.....	110.00
Total.....		\$7,802.51

DISBURSEMENTS

January 1 to December 31, 1926

JOURNAL FUND

1925			
December 26	Dr. H. P. Hoskins, miscellaneous petty expenses	\$ 38.15	
December 26	Wolf Detroit Envelope Co., envelopes.....	157.94	
December 26	Everton Engraving Co., halftones.....	55.61	
December 28	Dr. H. P. Hoskins, salary for December.....	416.67	
December 28	Alice Laverick, salary for December.....	135.00	
1926			
January 13	Friesema Bros. Printing Co., reprints.....	45.63	
January 13	Dr. H. P. Hoskins, postage.....	45.79	
January 29	Friesema Bros. Printing Co., printing January Journal.....	963.12	
January 29	Alice Laverick, salary for January.....	140.00	
February 15	Book Building, Inc., rent for February.....	118.00	
February 20	Everton Engraving Co., halftones.....	27.19	
February 20	Friesema Bros. Printing Co., reprints.....	131.74	
February 20	Dr. H. P. Hoskins, postage.....	51.56	
February 20	Dr. H. P. Hoskins, miscellaneous petty expenses	50.31	
March 9	Friesema Bros. Printing Co., printing February Journal.....	984.82	
March 9	Everton Engraving Co., halftones.....	112.85	
March 9	Dr. H. P. Hoskins, salary for February.....	416.67	
March 9	Alice Laverick, salary for February.....	140.00	
March 18	Friesema Bros. Printing Co., reprints.....	72.67	
March 18	Dr. H. P. Hoskins, postage.....	50.45	
March 18	Friesema Bros. Printing Co., printing March Journal.....	960.37	
March 30	Alice Laverick, salary for March.....	140.00	
March 30	Everton Engraving Co., halftones.....	124.34	
March 30	Friesema Bros. Printing Co., reprints.....	132.08	
April 14	Book Building, Inc., rent for April.....	118.00	
April 14	Friesema Bros. Printing Co., printing April Journal.....	952.62	
April 14	Dr. H. P. Hoskins, postage.....	49.50	
April 27	Friesema Bros. Printing Co., reprints.....	33.38	
April 27	Alice Laverick, salary for April.....	140.00	
April 27	Dr. H. P. Hoskins, salary for April.....	416.67	
May 10	Dr. H. P. Hoskins, postage.....	56.13	
May 10	Dr. H. P. Hoskins, miscellaneous petty expenses	44.40	
May 20	Friesema Bros. Printing Co., printing May Journal.....	972.82	
June 2	Alice Laverick, salary for May.....	140.00	
June 2	Friesema Bros. Printing Co., reprints.....	75.75	
June 7	Dr. H. P. Hoskins, old copies of Journal purchased.....	51.19	
June 7	Book Building, Inc., rent for June.....	118.00	
June 15	Friesema Bros. Printing Co., printing June Journal.....	953.75	
June 15	Dr. H. P. Hoskins, postage.....	45.33	
June 28	Addressograph Co., repairs to machine.....	44.94	
June 28	Dr. H. P. Hoskins, salary for June.....	416.67	
June 28	Alice Laverick, salary for June.....	140.00	
July 6	Friesema Bros. Printing Co., reprints.....	44.75	

July	6	Dr. H. P. Hoskins, miscellaneous petty expenses.....	37.72
July	18	Dr. H. P. Hoskins, postage.....	50.68
July	18	Friesema Bros. Printing Co., printing July Journal...	947.50
July	29	Friesema Bros. Printing Co., reprints.....	56.88
July	29	Everton Engraving Co., halftones.....	88.56
July	29	Alice Laverick, salary for July.....	140.00
August	14	Dr. H. P. Hoskins, miscellaneous petty expenses.....	40.17
August	14	Dr. H. P. Hoskins, postage.....	48.31
August	14	Book Building, Inc., rent for August.....	118.00
August	14	Friesema Bros. Printing Co., printing August Journal.	953.75
August	30	Dr. H. P. Hoskins, salary for August.....	416.67
August	30	Alice Laverick, salary for August.....	140.00
September	9	Schiffer Printing Co., stationery.....	8.75
September	9	Friesema Bros. Printing Co., reprints.....	64.64
September	25	Alice Laverick, salary for September.....	140.00
September	25	Friesema Bros. Printing Co., printing Sept. Journal...	960.00
September	25	Dr. H. P. Hoskins, postage.....	48.61
October	11	Friesema Bros. Printing Co., reprints.....	259.53
October	11	Book Building, Inc., rent for October.....	118.00
October	16	Friesema Bros. Printing Co., printing October Journal	972.50
October	16	Dr. H. P. Hoskins, postage.....	67.49
October	30	Dr. H. P. Hoskins, miscellaneous petty expenses.....	37.25
October	30	Alice Laverick, salary for October.....	140.00
October	30	Dr. H. P. Hoskins, salary for October.....	500.00
November	18	Dr. H. P. Hoskins, postage.....	39.45
November	18	Friesema Bros. Printing Co., printing Nov. Journal...	962.37
November	18	Dr. H. P. Hoskins, miscellaneous petty expenses.....	39.51
November	18	Friesema Bros. Printing Co., reprints.....	87.85
November	18	Everton Engraving Co., halftones.....	33.88
November	27	Alice Laverick, salary for November.....	140.00
December	18	Book Building, Inc., rent for December.....	118.00
December	18	Dr. H. P. Hoskins, postage.....	58.49
December	18	Friesema Bros. Printing Co., printing December Journal	961.12
December	29	Dr. H. P. Hoskins, miscellaneous petty expenses.....	48.33
December	29	Dr. H. P. Hoskins, old copies of Journal purchased...	41.27
December	29	Dr. H. P. Hoskins, salary for December.....	500.00
December	29	Alice Laverick, salary for December.....	140.00
Total.....			\$19,850.14

MILK INSPECTION REQUIRES TRAINED MEN

The International Association of Dairy and Milk Inspectors, having for its object the development of uniform and efficient inspection of dairy farms, milk establishments, milk and milk products, at its fifteenth annual convention, adopted the following resolution:

WHEREAS, This Association recognizes milk as the first necessity of life, and that inspection of the sources of production, distribution, and careful chemical and bacteriological examination of milk is necessary in the protection of the public health, therefore, be it

Resolved, That the International Association of Dairy and Milk Inspectors urgently recommend to the various state and city departments of health that, in the selection of those who are to fill the positions of dairy and milk inspectors, special effort be made to employ only those who are entirely reliable, thoroughly competent, and well qualified to adequately safeguard milk supplies and properly protect the public health.

Health News.

ASSOCIATION MEETINGS

UNIVERSITY OF MISSOURI SPECIAL COURSE FOR GRADUATE VETERINARIANS

The Veterinary Department of the University of Missouri, in conjunction with the Missouri Veterinary Medical Association, gave a special course for graduate veterinarians at Columbia, Missouri, January 25-26-27-28, 1927. The meetings were held in the Veterinary Building of the University of Missouri.

The work was arranged on college schedule, with night sessions to afford more time for instruction. Much interest was taken in all phases of the work presented. It will be seen from the following list of specialists and their subjects what kind of information was available.

Dr. H. E. Bemis, Professor of Surgery and Diseases of Breeding Animals, Veterinary Division, Iowa State College, had charge of the work on cattle and special surgery.

Dr. E. L. Quitman, Chicago, formerly Dean and Professor of Materia Medica and Therapeutics, Chicago Veterinary College, specialist in diseases of pet animals.

Dr. I. E. Newsom, Professor of Veterinary Pathology, Veterinary Division, Colorado Agricultural College, special investigator of diseases of sheep.

Dr. A. T. Kinsley, formerly Dean and Professor of Veterinary Pathology, Kansas City Veterinary College, specialist on diseases of swine.

Dr. Robert Graham, Professor of Veterinary Pathology, College of Agriculture and Experiment Station, University of Illinois, was in charge of a special poultry program.

Dr. R. C. Moore, formerly Dean and Professor of Surgery, St. Joseph Veterinary College, specialist on diseases of the udder.

Dr. Ralph Graham, U. S. Bureau of Animal Industry, inspector-in-charge of tuberculosis eradication in Missouri.

Dr. Homer A. Wilson, state veterinarian of Missouri.

The staff of the Missouri College of Agriculture furnished a part of the program that was most important and instructive to all veterinarians attending. The following contributed:

Dr. J. W. Connaway, chairman, Department of Veterinary Science; Dr. A. J. Durant, Professor of Poultry Pathology; Dr. O. S. Crisler, Superintendent of Serum Production; Dr. Andrew

Uren, Instructor in Veterinary Science; Mr. H. G. Newman, serologist in abortion investigation; E. A. Trowbridge, Professor of Animal Husbandry; A. C. Ragsdale, Professor of Dairy Husbandry; H. L. Kempster, Professor of Poultry Husbandry; Dr. A. G. Hogan, nutrition specialist; Prof. L. A. Weaver, specialist in swine husbandry; Prof. S. F. Russell, specialist in sheep husbandry; Prof. W. H. E. Reid, specialist in dairy production.

Dr. E. A. Shikles, of Dearborn, president of the Missouri Veterinary Medical Association, presided over the meetings. More than ninety veterinarians attended. Twenty applications for membership in the Association were received.

Dr. J. W. Connaway was elected an honorary member of the Association. Much credit is due Dr. Connaway and his staff of veterinarians for the manner in which they handled this project at the University.

J. D. RAY, *Secretary.*

VETERINARY MEDICAL ASSOCIATION OF NEW YORK CITY

FEBRUARY MEETING

The regular monthly meeting of the Veterinary Medical Association of New York City was held at the hospital of Drs. R. W. Gannett and H. B. Risley, 59 Lawrence St., Brooklyn, N. Y., February 2, 1927, at 8:30 p.m.

Dr. R. S. MacKellar reported on the nineteenth annual conference for veterinarians at Cornell University. Dr. C. G. Rohrer reported on his visit to veterinary hospitals en route to California and while there. Dr. Bruce Blair gave a report of his visit to France.

Drs. Joseph B. Engle and Lawrence W. Goodman, both of New York City, were elected to membership.

There being no further business, the meeting was then turned over to Drs. Gannett and Risley, and consisted of discussions of clinical cases in their hospital.

MARCH MEETING

The regular monthly meeting of the Veterinary Medical Association of New York City was held at Dr. C. G. Rohrer's hospital, 40 W. 61st St., New York City, March 2, 1927, at 8:30 p.m.

The minutes of the February meeting were read and approved. There being no literary program, new business was taken up, at which time it was moved by Dr. R. W. Gannett that discussions in the future be limited to five minutes. The motion was seconded and carried.

Dr. Jacob Lebish reported a pet shop on Tremont Avenue, New York City, which he assumed to be carrying on an illegal practice of veterinary medicine. Dr. Henry Amling reported on the same case.

There being no further business, new or old, the members were invited by Dr. Rohrer to inspect his hospital and cases, after which the following operations were performed.

Dr. E. R. Blamey very thoroughly demonstrated the setting of the front and back legs of a dog. Dr. J. Elliott Crawford performed an operation for reducing a prolapsed rectum by suturing part of the intestine to the wall of the abdomen. Dr. H. K. Miller demonstrated the cutting of a dog's tail and Dr. C. P. Zepp performed a cecectomy. Dr. Jacob Lebish showed a very interesting case of transplanting the sciatic nerve, after which the meeting adjourned.

C. P. ZEPF, *Secretary*.

TICK ERADICATION CONFERENCE

The annual tick eradication conference of federal, state and county workers and cooperating agencies was held at the Seminole Hotel, Jacksonville, Florida, February 7-9, 1927.

The morning session of the first day was called to order by Dr. R. A. Ramsay, chief, Tick Eradication Division, Bureau of Animal Industry. He introduced Hon. John T. Alsop, Jr., mayor of Jacksonville, who gave the address of welcome. Dr. C. A. Cary, state veterinarian of Alabama, responded. Dr. J. R. Mohler, chief of the Bureau of Animal Industry, gave an interesting travelogue of current live stock activities, pointing out the possibilities for the farmer of the Southeast. His address was followed by a report by Dr. J. V. Knapp, state veterinarian of Florida, covering progress thus far in the new Florida territory along the Suwannee River, this territory to be completed this year. This subject brought on a discussion by Dr. S. J. Horne, B. A. I. inspector-in-charge, Georgia and Florida, and Dr. Pefer F. Bahnsen, state veterinarian of Georgia.

At 1:30 p.m., the meeting was called to order in the Bue Room, where the Department of Agriculture's new motilon-

picture film, "Southern Cattle Yesterday and Today," was shown for approval of Bureau and state officials. A lecture by John F. Fahey followed.

"Working Arrangements in Cooperative Tick Eradication" was the subject of a paper written by Dr. J. H. Bux, and read by Mr. W. A. Denman, of Arkansas. The paper was discussed by Drs. Wm. Moore, L. J. Allen and R. V. Rafnel.

The second day of the conference opened with an interesting address by Prof. H. R. Smith, commissioner, National Live Stock Exchange, Chicago, Ill. Prof. Smith spoke on the "Adaptability of the South to Increased Live Stock Production, Particularly Cattle." He gave his opinion not as one who is familiar with conditions in the South, but merely his views as an observer.

Mr. J. H. Heald, Division of Dairy and Food Inspection, Winston-Salem, N. C., brought home to the audience the "Relation of the Public Health Official to the Dairy Industry of the South."

"Cattle Production Possibilities and Responsibilities in Recently Released Territory" was discussed by Mr. E. W. Sheets, chief, Animal Husbandry Division, Bureau of Animal Industry, Washington, D. C.

Papers were read by Dr. W. K. Lewis, state veterinarian of South Carolina; Dr. W. A. McDonald, B. A. I. inspector-in-charge, Little Rock, Arkansas; and Dr. L. J. Allen, B. A. I. inspector-in-charge, Oklahoma City, Oklahoma.

Those attending the conference were tendered a banquet at the Casa Marina Hotel, Jacksonville Beach, on Tuesday evening, as guests of the Jacksonville Chamber of Commerce and the Bankers' Association of Jacksonville. Toasts were given by Dr. Ramsay and Dr. Mohler as well as various representatives of different states. An interesting address was made by Mr. W. J. Sheely, general live stock agent of the Atlantic Coast Line Railroad. An outstanding feature of the evening was a number of vocal selections rendered by a quartet representing Georgia and Florida Bureau veterinarians.

On Wednesday morning, officials of the Penny-Guinn Farms transported the members to their farms at Green Cove Springs, Florida, over a beautiful drive of forty miles from Jacksonville, through Orange Park. Business was resumed on arrival and during this session an address was made by Hon. C. H. Tedder, mayor of Live Oak, Florida.

"Points of Interest in 1926" were brought out by Dr. W. M. MacKellar, assistant chief, Tick Eradication Division, as well as an address by Dr. R. A. Ramsay, who touched on the "Summary and Plans" for this season's program.

The Committee on Resolutions consisted of Dr. W. K. Lewis, South Carolina; Dr. R. V. Rafnel, Mississippi; Dr. H. L. Darby, Texas; Dr. C. A. Cary, Alabama; Dr. J. V. Knapp, Florida; Dr. L. J. Allen, Oklahoma; and Dr. P. F. Bahnsen, Georgia.

States were represented at the conference as follows: Washington, D. C., 5; Alabama, 5; Georgia, 9; South Carolina, 2; North Carolina, 2; Louisiana, 3; Mississippi, 5; Florida, 50; Arkansas, 5; Texas, 6; Oklahoma, 1; Virginia, 1; and Illinois, 1.

U. G. H.

ONTARIO VETERINARY ASSOCIATION

The winter meeting of the Ontario Veterinary Association was held at the Prince George Hotel, Toronto, February 10, 1927. A large number of members were present and all branches of the profession well represented. A few visitors from bordering states were in attendance as well.

The meeting convened at 10 a.m. and the president, Dr. R. W. Devereux, of Brantford, gave the opening address, which dealt chiefly with matters concerning the Association and practitioners in general. The remainder of the morning was devoted to business of the Association and the reports of the various committees.

After luncheon and for the remainder of the afternoon, addresses were given and discussions on the topics submitted. These were: "Peculiar Hepatic Conditions," by Dr. T. B. Buckley, of Toronto; "The Control of Parasitic Diseases Affecting Foxes," by Dr. H. E. Batt, of the Ontario Veterinary College, Guelph; "Problems in Small Animal Practice," by Dr. F. E. McClelland, of Buffalo, N. Y.; "Some Phases of Fox Ranching," by Dr. R. G. Law, of Kirkfield. From a question-box a number of queries were discussed, the leaders in the discussion being Dr. R. Gwatkin, of Guelph, on biological questions; Dr. R. W. Devereux, on cattle practice; Dr. J. A. Campbell, of Toronto, on small animal practice; and Dr. W. J. R. Fowler, of Guelph, on surgery and general practice.

The meeting adjourned for a brief recess and at 6:30 the members present partook of a banquet and enjoyed an entertainment, which had been provided by the Program Com-

mittee. After the toast to the King, a combined address was given by Dr. J. C. Brown, of Markham, on "Parturient Paresis," and Dr. W. B. Brebner, of the Department of Medical Research, University of Toronto, on "Hypoglycemia." Dr. Brown dealt chiefly with the clinical aspects of these cases and Dr. Brebner gave a highly entertaining and instructive discussion of hypoglycemia, its causes, effects and its correction. Another very interesting and valuable address was given by Dr. L. Joslyn Rogers, professor of analytical chemistry, University of Toronto, on "Hints in Submitting Specimens for Chemical Examination." "The Milk Supply of Brantford under the Municipal System of the Department of Agriculture" was the subject of another useful and instructive address, by Lt. Col. A. B. Cutcliffe, inspector of foods, Brantford.

The final address of the evening was given by Dr. C. D. McGilvray, principal of the Ontario Veterinary College. In the course of his remarks, Dr. McGilvray outlined the activities of the various departments of the College and the advancement which had been made during the past eight years.

By means of a few short appreciative remarks the thanks of the Association members were conveyed to the Program Committee and those who had taken part in it.

R. A. McI.

VETERINARY ASSOCIATION OF MANITOBA

The annual meeting of the Veterinary Association of Manitoba was held at the Royal Alexandra Hotel, Winnipeg, February 11, 1927. There was a good attendance of members from all parts of the Province.

The meeting opened with the business session in the morning, when the following officers for the ensuing year were elected: President, Dr. J. B. Still, Winnipeg; vice-president, Dr. W. A. Shoults, Winnipeg; secretary-treasurer and registrar, Dr. W. Hilton, Winnipeg. Council: Drs. J. B. Still, Winnipeg; A. L. Alton, Portage-la-Prairie; A. Savage, Winnipeg; W. A. Shoults, Winnipeg; W. Hilton, Winnipeg; Owen McGuirk, Dauphin; J. R. Fisher, Brandon. Examining Board: Drs. A. Savage, W. A. Shoults and Owen McGuirk. Auditors: Drs. T. G. Sprague and R. G. Fox.

The Secretary-Treasurer's report showed the Association to be in a very sound financial position, with a balance of \$826.42 to its credit at the bank. The register showed 125 active members

and eight honorary members, three new members having been enrolled during the past year. Prosecutions of parties practicing illegally in the Province, which had been conducted during the year, had resulted in the stopping of their activities and the imposition of fines in some of the cases.

Dr. Hugh Ovens, of Swan River, an old-time practitioner, was elected an honorary member of the Association.

The clinic held during the past summer, at which Dr. L. A. Merillat was the chief demonstrator, having proved such a great success, it was decided to hold another clinic during the coming summer, at Brandon.

A resolution was unanimously passed, to be forwarded to the federal authorities, asking that the practicing veterinarian be given an opportunity to take some part in the tuberculin-testing conducted under the policies of the Health of Animals Branch.

At the afternoon session, the following addresses and papers were given, all of which were highly interesting and of educational value:

"The Value of the Services of the Veterinarian in the Promotion of the Live Stock Industry," by Mr. J. H. Evans, Deputy Minister of Agriculture for Manitoba.

"The Relationship of the Veterinarian to the Fox Farmer," by Dr. J. A. Allen, Director of the Western Canada Fox Breeders' Association.

"Necrobacillosis," by Dr. J. B. Still, Chief Veterinary Inspector, Health of Animals Branch, Manitoba.

"The Autopsy Habit," by Dr. A. Savage, Animal Pathologist, Manitoba Agricultural College.

"Country Practice in Manitoba," by Dr. Owen McGuirk, Dauphin.

"Conditions Similar to Swamp Fever Peculiar to the Interlake District of Manitoba," by Dr. H. J. Watt, Killarney.

"The Veterinarian's Advice to the Live Stock Owner on Matters of Breeding and Feeding," by Dr. R. A. McLoughry, Federal Live Stock Branch.

WILLIAM HILTON, *Secretary.*

FLORIDA STATE VETERINARY MEDICAL ASSOCIATION

The Florida State Veterinary Medical Association held its annual meeting in Gainesville, February 21-22, 1927, in the College of Agriculture. This meeting proved to be one of the most successful ever held by the Association. A large attendance was present throughout the entire session. The following is the program which was carried out:

FEBRUARY 21

Address of Welcome—Dr. Wilmon Newell, College of Agriculture, Gainesville.

Response—Dr. H. C. Nichols, Ocala.

"Some Phases of Milk Inspection Work"—Dr. J. G. Fish, Jr., Department of Health, West Palm Beach.

"Some Principles of Food Inspection Work"—Dr. J. R. Wells, Department of Health, West Palm Beach.

"Tuberculosis in Live Stock"—Dr. J. G. Fish, Sr., B. A. I. Inspector-in-Charge, Tallahassee.

Address—Dr. L. H. Pammel, Iowa State College, Ames, Iowa.

"Tick Eradication in Florida"—Dr. J. V. Knapp, State Veterinarian, Tallahassee.

A banquet was served at the Hotel White House in the evening.

FEBRUARY 22

"Some Peculiar Occurrences in Hog Cholera Work"—Dr. A. P. Abbott, Live Oak.

Address—Dr. H. N. Parker, Department of Health, Jacksonville.

"Contagious Abortion in Cattle"—Dr. A. L. Shealy, University of Florida, Gainesville.

"Report on the American Veterinary Medical Association Meeting"—Dr. G. E. Pace, Marianna.

The Association was indeed fortunate in having Dr. L. H. Pammel, of Iowa State College, with us to give a discussion on the "Poisonous Plants of Florida." Dr. Pammel had made a collection of many of the poisonous plants and used these specimens in his lecture. Each veterinarian present felt greatly indebted to Dr. Pammel for his comprehensive discussion of this important subject.

The Association was also pleased to have Dr. H. N. Parker, City Health Officer of Jacksonville, with us. He gave many important points in connection with milk inspection work.

The election of officers for the ensuing year was the concluding part of the program, and resulted as follows: Dr. Thos. J. Mahaffy, Jacksonville, president; Dr. F. G. Martin, Lakeland, vice-president; Dr. A. L. Shealy, Gainesville, secretary-treasurer.

A. L. SHEALY, *Secretary.*

NORTHEASTERN PENNSYLVANIA VETERINARY MEDICAL CLUB

A meeting of the Northeastern Pennsylvania Veterinary Medical Club was held at Hotel Casey, Scranton, March 1, 1927, at which time Dr. R. S. Amadon, of the Veterinary School of the University of Pennsylvania, gave a talk on "The Physiology of the Genital Tract of Cattle," which was very educating, interesting and pleasing to all present.

The lecture was one of a series, in connection with veterinary extension work, being conducted by the University of Pennsyl-

vania for the benefit of the practicing veterinarians of the Keystone State. Seventeen members and one visitor were in attendance.

SAGINAW VALLEY VETERINARY MEDICAL ASSOCIATION

A very successful meeting of the Saginaw Valley Veterinary Medical Association was held in the Court House of Saginaw (Michigan), March 31, 1927. The meeting was opened with a short address by Dr. M. D. Ducey, of Merrill, president. Dr. F. R. Lambie, of Midland, reported his experiences in connection with a number of cases in his practice. Dr. W. E. Coomer, of Bay City, president of the Michigan State Veterinary Medical Association, addressed the members on several topics of current interest. Dr. C. H. Carey, of Montrose, read a paper entitled, "Poultry Practice and Its Relation to the Veterinarian." Dr. L. H. LaFond, of Flint, reported on his experiences with serotoxylin as an immunizing agent against canine distemper. The program closed with a very interesting question-box. Officers for the ensuing year were elected as follows: President, Dr. H. E. Defendorf, of Grand Blanc; secretary, Dr. M. D. Ducey, of Merrill.

SOUTHEASTERN MICHIGAN VETERINARY MEDICAL ASSOCIATION

The meeting of the Southeastern Michigan Veterinary Medical Association held at the Barlum Hotel, Detroit, April 13, 1927, served a threefold purpose: the regular monthly meeting, the annual meeting and the celebration of the tenth anniversary of the founding of the Association.

After the members had partaken of an excellent dinner, the President called upon Dr. R. H. Wilson, of Rochester, Michigan, one of the charter members of the Association, who reviewed the history of the organization from its inception to the present time. With a few well-chosen remarks, Dr. Wilson presented, in behalf of the Association, a leather traveling bag to Dr. H. Preston Hoskins, as a token for his faithful services to the organization during its entire ten years of existence.

Dr. Hoskins has not only served the Association since its inception, as Secretary-Treasurer, but has been largely responsible for keeping it active during the past decade. The presentation of this token evidently came as a complete surprise to

Dr. Hoskins, who for a moment was apparently nonplussed. However, his usual agility of mind soon came to his rescue and in a few well-chosen words he expressed his appreciation of the remembrance.

At this meeting the members were honored by the presence of two guests, Dr. Henry F. Vaughan, Commissioner of Health, City of Detroit, and Dr. H. J. Stafseth, Division of Veterinary Medicine, Michigan State College, East Lansing.

Dr. Vaughan spoke of the problems of public health in which the veterinarian was directly interested. He also expressed his appreciation to the Association for their interest and aid in carrying out various measures, which directly or indirectly affected the health of the community. Special reference was made to the recent activities of the Association in cooperating with the Department of Health in obtaining reliable data on the effectiveness of antirabic vaccination of dogs.

Dr. Stafseth, in an exceedingly interesting way, told of veterinary conditions and of his experiences during his recent sojourn in Europe. His talk was profusely illustrated with lantern-slides of the principal European veterinary institutions, several of which have been in existence over a hundred years. It is evident from the requirements, spoken of by Dr. Stafseth, for entrance into their veterinary institutions and the character of the buildings shown in the photographs, that veterinary instruction in Europe is on a very high plane. Any one having an opportunity, should not miss hearing Dr. Stafseth tell of his experiences, for he tells them in such a way that they are almost realistic.

Two reels of motion pictures, "Hog Cholera Control" and "Health for Hogs," obtained from the U. S. Department of Agriculture, were shown, after which Dr. Hoskins told of his recent conference in Washington with representatives from the B. A. I., the National Association of B. A. I. Veterinarians, and the Executive and Legislative committees of the A. V. M. A., relative to ways and means for obtaining increased remuneration for Bureau veterinarians. As was pointed out, increased remuneration to these veterinarians will do much towards raising the status of the veterinary profession as a whole.

This being the annual meeting, the following officers were unanimously elected: President, Dr. E. E. Patterson, Detroit; Vice-President, from Wayne County, Dr. Hugo Cornehl, Detroit; Vice-President from Macomb County, Dr. L. H. Smith, Mt. Clemens; Vice-President from Oakland County, Dr. L. F.

Baldock, Birmingham; Secretary-Treasurer, Dr. H. Preston Hoskins, Detroit.

After a few words by the retiring president and the newly elected officers, the meeting was adjourned.

Roll-call showed 30 members present.

A. S. SCHLINGMAN.

TEXAS VETERINARIANS TO MEET

The annual meeting of the State Veterinary Medical Association of Texas will be held in conjunction with the annual short course for graduate veterinarians at the Agricultural and Mechanical College of Texas, College Station, Texas, June 13 to 18. This year the special features of the short course will be in connection with diseases of poultry and small animals. There will also be clinics devoted to the diseases of cattle, swine, sheep and horses. Veterinarians of Texas and nearby states should keep the dates in mind and plan to take advantage of the exceptional opportunities offered by this meeting.

MICHIGAN NEWS ITEMS

A meeting of the federal, state and county veterinarians engaged in tuberculosis eradication work in Michigan was held in the Court House at Flint, March 24, 1927. The meeting was attended by about fifty veterinarians and was featured by the presence of Mr. Herbert E. Powell, newly appointed Commissioner of Agriculture. Matters pertinent to the tuberculosis eradication campaign were thoroughly discussed throughout the afternoon and evening.

A bill, having as its purpose the regulation of prices charged for tuberculin testing by local veterinarians, recently passed the Michigan House of Representatives and was referred to the Committee on Agriculture of the Senate. Members of the Legislative Committee of the Michigan State Veterinary Medical Association and other veterinarians were given an opportunity to express their opinions relative to this proposed legislation before the Committee. Latest available reports indicate that the bill has not been reported out by the Committee and it is hoped that it will not be so reported.

After all, we don't live to work; we work to live. Or is that heresy?—*John R. Fleming in The Ohio Extension Service News.*

NECROLOGY

OTTO FAUST

Dr. Otto Faust, of Poughkeepsie, N. Y., one of the most widely known veterinary practitioners of North America, died at the Mayo Clinic, Rochester, Minn., March 9, 1927. Bronchial pneumonia was the immediate cause of death. Dr. Faust had been a patient at the hospital since February 26 and became critically ill about March 4. He was 60 years of age.

Born and raised in Poughkeepsie, the son of a well-known veterinarian, Dr. John Faust, who died in 1901, Faust the younger entered the American Veterinary College and was graduated in 1888. He was a classmate of Dr. Harris B. McDowell, prominent Delaware veterinarian, whose death occurred two days later. For a number of years Dr. Faust served as secretary of the American Veterinary College Alumni Association.

Dr. Faust joined the A. V. M. A. in 1902, following the death of his father the year before. At the St. Louis meeting, in 1922, it was stated that Dr. Faust had missed but one meeting since he became a member and on that occasion he missed because he wanted to attend a certain horse race. He was at Montreal, Des Moines, Portland and Lexington, making twenty-six successive meetings he attended, according to the records.

At the St. Louis meeting referred to, in a eulogy of the private practitioner, Dr. J. G. Ferneyhough paid a splendid tribute to Dr. Faust and suggested that his photograph be reproduced in the JOURNAL as a recognition of the private practitioner. This was done (see the JOURNAL for January, 1923, p. 484). On that occasion Editor Mohler referred to Dr. Faust as "a worthy son of a noble father," and offered the following additional tribute, with apologies to Sir Walter Scott.

*"Breathes there another in our ranks with loyalty so true,
With keener sense of membership, of duty's broader view?
A worthy trait of brotherhood his faith and trust inspire,
Let us his action emulate—son of a noble sire."*

His hearing being impaired, Dr. Faust invariably occupied a seat in the front row at the meetings he attended. He was an attentive listener, no matter what was the subject under discussion, routine business or a deeply scientific topic. He fre-

quently served on committees of the A. V. M. A. and in 1925, at the Portland meeting, he was honored by election to a vice-presidency. And no one ever appreciated the honor more. On the occasion of his installation in office, Dr. L. A. Merillat, then presiding, paid Dr. Faust this tribute:

Dr. Faust, ever since I was a boy, about twenty-two years old, I remember coming to the meetings of the American Veterinary Medical Association, and if I am not badly mistaken you were always there. You are honored here, rather late in your life, Doctor, and I want to apologize, on behalf of the American Veterinary Medical Association, for not having given you this decoration many years ago, a decoration that you very, very richly deserve, in having been the personification of what a real good, honorable, ethical veterinary practitioner is.

Dr. N. S. Mayo has expressed the sentiments of hundreds of Dr. Faust's colleagues, in the following words:

I should feel recreant to my duty if I did not pay a feeble tribute to one of the most lovable of veterinarians, Dr. Otto Faust. A prince of good fellows, of sterling integrity, a true friend, a superior practitioner and a gentleman above reproach. Otto Faust, I salute you.

Dr. Faust organized the Hudson Valley Veterinary Association. He was a member of the New York State Veterinary Medical Society, and served as vice-president (1915-16) and as president (1916-17) of the Society. For many years he was president of the Phoenix Hose Fire Company, of Poughkeepsie. He also was a member of the New York State Board of Veterinary Medical Examiners for a number of years.

Burial took place at Poughkeepsie, March 12. Among the honorary pall-bearers were the following members of the profession: Dr. Adolph Eichhorn, Dr. George A. Knapp, Dr. W. G. Hollingworth, Dr. George H. Berns, Dr. Wright J. Smith and Dr. D. B. Comstock.

Dr. Faust is survived by one son, two brothers, two sisters and a nephew.

HARRIS B. McDOWELL

Dr. Harris B. McDowell, of Middletown, Delaware, died in a New York hospital, March 11, 1927, following an operation for gall-stones. He was 65 years of age.

A graduate of the American Veterinary College, class of 1888, Dr. McDowell spent his entire professional career in the vicinity of Middletown. For many years he was active in Democratic politics and had served on both the Democratic state and county committees. In 1922 he was elected to the Delaware Senate and served in the 1923 and 1925 sessions of the Legis-

lature. During the latter session he held the important post of chairman of the Senate Committee on Appropriations. He also served as secretary of the Budget Committee.

Dr. McDowell joined the A. V. M. A. in 1908 and served as resident secretary of Delaware for several years. He was secretary of the Delaware State Board of Veterinary Medical Examiners at the time of his death and always took a prominent part in the activities of the Delaware State Veterinary Medical Association. He is survived by his widow, two daughters and two sons.

FLOYD P. HUST

Dr. Floyd P. Hust, of Jeffersonville, N. Y., died at his home, March 8, 1927, after a brief illness from pneumonia.

Born in Jeffersonville, March 10, 1892, Dr. Hust attended local schools and entered the New York State Veterinary College at Cornell University. He received his degree in 1918. Shortly following his graduation, Dr. Hust enlisted in the Veterinary Corps and was stationed at Camp Greenleaf.

Dr. Hust joined the A. V. M. A. in 1922. He was a member of Bata Chapter of the Alpha Psi Fraternity. He was Past Master of the Jeffersonville Masonic Lodge and was Sullivan County (N. Y.) veterinarian at the time of his death. He is survived by his widow.

ALBERT J. CREIGHTON

Dr. Albert J. Creighton, of Ubly, Mich., died suddenly March 10, 1927, while attending a sick cow. Death was due to apoplexy. Dr. Creighton was a graduate of the Ontario Veterinary College, class of 1908. He was 48 years of age and leaves a widow and six children.

CHARLES LOUIS LUMBY

Dr. Charles L. Lumby, formerly of Byron, Ill., died at the home of his brother, in Chicago, March 9, 1927, following an illness of six months due to cancer.

Born in Chicago, Ill., November 5, 1883, Dr. Lumby attended the city schools and the McKillip Veterinary College. He was graduated in 1906. He practiced at Byron and Sheridan, Ill., later entering the employ of the federal B. A. I.

Dr. Lumby joined the A. V. M. A. in 1917. He is survived by one daughter, his father and four brothers and sisters.

HARRY B. CALE

Dr. Harry B. Cale, of Macomb, Ill., committed suicide at the St. Francis Hospital, Macomb, March 15, 1927, by hanging himself with a bell-cord tied to the head of his bed. Poor health was given as the cause of his rash act. Dr. Cale was a graduate of the Chicago Veterinary College, class of 1889.

GEORGE R. BRUNSON

Dr. George R. Brunson, formerly of Brownsburg, Ind., but for the last few years a patient at the Sunnyside Tuberculosis Sanitarium, at Oaklandon, Ind., died at his home in Indianapolis, March 15, 1927. Dr. Brunson was a graduate of the Indiana Veterinary College, class of 1910.

ELIAS TROSTEL LAU

Dr. Elias T. Lau, of Littlestown, Pa., died March 26, 1927. Dr. Lau was a graduate of the University of Pennsylvania, class of 1916. He was a member of Alpha Psi Fraternity and, as a student, took a deep interest in the welfare of Epsilon Chapter.

JOHN T. PURCELL

Friends and acquaintances of Dr. John T. Purcell will be shocked to learn of his death, which occurred at his home in Madison, Wisconsin, April 2, 1927. He submitted to a major operation about two years ago and had remained in poor health.

Dr. Purcell was born in Chicago, Illinois, June 23, 1869. He received his early education in the Catholic schools of that city, later took a business course, and entered McKillip Veterinary College in 1904. He was graduated in 1907, with the degree of D. V. M. He entered the U. S. Bureau of Animal Industry the same year.

As a Bureau employe Dr. Purcell served in various assignments, his first work being on meat inspection, at Chicago, where he remained one year. For nine years he was assigned to field inspection work, which included the eradication of scabies and the control of dourine and glanders, with headquarters at Rapid City, S. D. In 1917 he was assigned to hog

cholera control work in Nebraska for training, and in the same year was placed in charge of a similar project in Wisconsin, the position he held at the time of his death. He joined the A. V. M. A. in 1910.

Dr. Purcell was endowed with many sterling qualities. He was kind and sympathetic in nature, upright and square in his dealings, and equipped with unusual mentality. He had a high sense of duty and in all his assignments he performed his work in a thorough, efficient and faithful manner. He had a large circle of friends and admirers. He leaves a wife and three daughters.

T. P. W.

SAMUEL D. LARZELERE

Dr. S. D. Larzelere, of Jenkintown, Pa., died suddenly, April 5, 1927. He fell over dead, in the smoking-car of a Reading Railway train, as it approached the Philadelphia terminal. Death was attributed to heart disease, and overexertion in running for the train is believed to have brought on the fatal attack. Dr. Larzelere was 58 years old. He was a graduate of the University of Pennsylvania, class of 1890, and had practiced in Jenkintown ever since graduation. Dr. Larzelere had a very pleasing personality and was known to everyone for many miles around.

JOSEPH FREDERICK SPIKER

Dr. Joseph F. Spiker, of Sheridan, Wyoming, died April 11, 1927, following a stroke of paralysis several days before.

Born in Lucas County, Iowa, March 6, 1880, Dr. Spiker received a common school education and entered the Chicago Veterinary College. He was graduated in 1903. For a short period Dr. Spiker acted as State Veterinarian of Wyoming. In 1918 he entered the service of the U. S. Bureau of Animal Industry and was assigned to South St. Paul. He remained in the Bureau for three years, during which time he worked on various projects, including yard inspection, hog cholera control, meat inspection and tuberculosis eradication.

Dr. Spiker joined the A. V. M. A. in 1919. He was prominent in civic activities in Sheridan and was about to be appointed City Meat and Milk Inspector when the final summons came. He is survived by his widow, one son, one sister and four brothers.

Mr. I. N. Weaver, father of Dr. D. S. Weaver (K. C. V. C. '16), of Coon Rapids, Iowa, died March 29, 1927, at the age of 78 years.

PERSONALS

MARRIAGE

Dr. Frank M. Wilson (Chi. '11), to Miss Pagie Page, both of Mechanicsville, Iowa, March 26, 1927.

BIRTH

To Dr. and Mrs. D. S. Weaver, of Coon Rapids, Iowa, a daughter, Patricia Ann, March 26, 1927.

PERSONALS

Dr. Robert L. Galt (U. P. '23) has entered practice in Quarryville, Pa.

Dr. C. C. Officer (Colo. '14) has removed from Grapeland, Texas, to Ferris, same state.

Dr. Guy E. Bradham (Ind. '11), formerly of Trenton, Ill., has located at Melvin, Ill.

Dr. W. E. Simonsen (K. S. A. C. '12) has removed from Cherokee, Iowa, to Quimby, Iowa.

Dr. J. H. Patterson (K. C. V. C. '14), formerly of Hillview, Ill., is now at White Hall, Ill.

Dr. Arthur C. Davidson (Corn. '26) has removed from Gouverneur to Edwards, N. Y.

Dr. Charles W. Fisher (Ind. '17) has removed from Martinsville, Ind., to Royal Center, Ind.

Dr. L. O. Fish (Ind. '16), formerly of Norman Station, Ind., removed to Spencer, Ind., April 1.

Dr. E. D. Martin (O. S. U. '11) gives his new address as 36 Third Street, S. E., Carrollton, Ohio.

Dr. O. A. Cook (Chi. '17), formerly of Henry, Ill., is now in Chicago. Address: 1639 East 67th Street.

Dr. S. S. Morgan (K. C. V. C. '12), formerly of Richmond, Missouri, is now practicing in Tampa, Fla.

Dr. Clarence C. Hisel (K. C. V. C. '16), of Enid, Okla., has been appointed state veterinarian of Oklahoma.

Dr. M. M. Fletcher (Chi. '06), of Peoria, Ill., is reported to have sold his practice on account of ill health.

Dr. Roy W. Broadhurst (San Fran. '13), formerly of Long Beach, Calif., is now located at Canutillo, Texas.

Dr. E. A. Buxton (Chi. '90), of Vinton, Iowa, has been re-elected Mayor of his town, carrying every precinct.

Dr. H. A. Meisner (U. P. '90), a practitioner of Baltimore for many years, is now located at Rodger's Forge, Md.

Dr. C. J. Marshall (U. P. '94) spent Easter vacation on his farm at "Towner Hill," Bradford County, Pennsylvania.

Dr. B. E. Grover (Chi. '12) has sold his practice at West Branch, Iowa, and entered practice again at Pleasantville, Iowa.

Dr. Peter Garside (Chi. '10), who has been at Daytona Beach, Florida, during the winter, has returned to Bourbon, Ind.

Dr. E. L. Cornman (U. P. '00), of Marietta, Pa., spent Easter with a classmate, Dr. Grant Catlatt, near Strasburg, Virginia.

Dr. A. L. Brown (Corn. '15), who has been in practice at Walton, N. Y., has accepted a position with the Borden Company.

Dr. N. F. Williams (K. C. V. C. '11) has been reappointed state veterinarian of Texas by the new governor of the Lone Star State.

Dr. T. J. Stover (Ont. '01), formerly of Arcadia, Calif., is now located in Pasadena, Calif. Address: 262 S. Roosevelt Avenue.

Dr. A. E. Harding (Ont. '16), formerly of Jerseyville, Ill., has purchased the practice of Dr. L. V. Puckett, at Mt. Vernon, Ill.

Dr. C. G. Glendinning (Ont. '89), formerly of Clinton, Ill., and Fort Lauderdale, Fla., has entered the real estate business at Decatur, Ill.

Dr. L. V. Puckett, of Mt. Vernon, Ill., has been appointed Adams County (Ill.) Veterinarian, succeeding Dr. Charles W. Gates, resigned.

Dr. Wm. Herbert Lowe (Amer. '88), of Paterson, N. J., was recently elected a member of the Board of Directors of the Paterson Rotary Club.

Dr. J. F. DeVine (Amer. '98), of Goshen, N. Y., judged the hunters and saddle horses at the Pinehurst (N. C.) Horse Show, April 4-15, 1927.

Dr. Arch Freer (Corn. '13), who has been located at Charleston, Miss., for some time, has returned to New York State. He is now located at Jeffersonville.

Dr. I. L. Buchanan (Corn. '09) recently gave a talk on "Jurisprudence" before the senior class of the New York State Veterinary College at Cornell University.

Dr. C. A. Forbes (Chi. '15), of Princeton, Ill., has been employed by Marshall and Putnam counties (Ill.) to conduct tuberculin tests. He is located at Henry, Ill.

Dr. J. R. Taylor (Chi. '04), of Sullivan, Ill., has been employed as Fayette County (Ill.) Veterinarian, at a salary of \$3,600 per year. He assumed his duties April 1.

Dr. B. A. Brian (K. C. V. C. '17), who has been located in Belle Plaine, Kansas, for the past ten years, has removed to Minonk, Ill., and entered practice there.

Mr. I. N. Weaver, father of Dr. D. S. Weaver (K. C. V. C. '16), of Coon Rapids, Iowa, died March 29, 1927, at the age of 78 years.

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Dr. L. O. Fish (Ind. '16), formerly of Norman Station, Ind., removed to Spencer, Ind., April 1.

Dr. E. D. Martin (O. S. U. '11) gives his new address as 36 Third Street, S. E., Carrollton, Ohio.

Dr. O. A. Cook (Chi. '17), formerly of Henry, Ill., is now in Chicago. Address: 1639 East 67th Street.

Dr. S. S. Morgan (K. C. V. C. '12), formerly of Richmond, Missouri, is now practicing in Tampa, Fla.

Dr. Clarence C. Hisel (K. C. V. C. '16), of Enid, Okla., has been appointed state veterinarian of Oklahoma.

Dr. M. M. Fletcher (Chi. '06), of Peoria, Ill., is reported to have sold his practice on account of ill health.

Dr. Roy W. Broadhurst (San Fran. '13), formerly of Long Beach, Calif., is now located at Canutillo, Texas.

Dr. E. A. Buxton (Chi. '90), of Vinton, Iowa, has been re-elected Mayor of his town, carrying every precinct.

Dr. H. A. Meisner (U. P. '90), a practitioner of Baltimore for many years, is now located at Rodger's Forge, Md.

Dr. C. J. Marshall (U. P. '94) spent Easter vacation on his farm at "Towner Hill," Bradford County, Pennsylvania.

Dr. B. E. Grover (Chi. '12) has sold his practice at West Branch, Iowa, and entered practice again at Pleasantville, Iowa.

Dr. Peter Garside (Chi. '10), who has been at Daytona Beach, Florida, during the winter, has returned to Bourbon, Ind.

Dr. E. L. Cornman (U. P. '00), of Marietta, Pa., spent Easter with a classmate, Dr. Grant Catlatt, near Strasburg, Virginia.

Dr. A. L. Brown (Corn. '15), who has been in practice at Walton, N. Y., has accepted a position with the Borden Company.

Dr. N. F. Williams (K. C. V. C. '11) has been reappointed state veterinarian of Texas by the new governor of the Lone Star State.

Dr. T. J. Stover (Ont. '01), formerly of Arcadia, Calif., is now located in Pasadena, Calif. Address: 262 S. Roosevelt Avenue.

Dr. A. E. Harding (Ont. '16), formerly of Jerseyville, Ill., has purchased the practice of Dr. L. V. Puckett, at Mt. Vernon, Ill.

Dr. C. G. Glendinning (Ont. '89), formerly of Clinton, Ill., and Fort Lauderdale, Fla., has entered the real estate business at Decatur, Ill.

Dr. L. V. Puckett, of Mt. Vernon, Ill., has been appointed Adams County (Ill.) Veterinarian, succeeding Dr. Charles W. Gates, resigned.

Dr. Wm. Herbert Lowe (Amer. '88), of Paterson, N. J., was recently elected a member of the Board of Directors of the Paterson Rotary Club.

Dr. J. F. DeVine (Amer. '98), of Goshen, N. Y., judged the hunters and saddle horses at the Pinehurst (N. C.) Horse Show, April 4-15, 1927.

Dr. Arch Freer (Corn. '13), who has been located at Charleston, Miss., for some time, has returned to New York State. He is now located at Jeffersonville.

Dr. I. L. Buchanan (Corn. '09) recently gave a talk on "Jurisprudence" before the senior class of the New York State Veterinary College at Cornell University.

Dr. C. A. Forbes (Chi. '15), of Princeton, Ill., has been employed by Marshall and Putnam counties (Ill.) to conduct tuberculin tests. He is located at Henry, Ill.

Dr. J. R. Taylor (Chi. '04), of Sullivan, Ill., has been employed as Fayette County (Ill.) Veterinarian, at a salary of \$3,600 per year. He assumed his duties April 1.

Dr. B. A. Brian (K. C. V. C. '17), who has been located in Belle Plaine, Kansas, for the past ten years, has removed to Minonk, Ill., and entered practice there.

Dr. David A. Benson (Gr. Rap. '18), of Bark River, Mich., has accepted a position with the U. S. Bureau of Animal Industry and been assigned to meat inspection work in Chicago.

Dr. John Mudd (McK. '18), of Stronghurst, Ill., has received the appointment as Cass County (Ill.) Veterinarian. He entered upon his duties April 1, with headquarters at Virginia, Ill.

Dr. S. A. Ridgway (Ind. '03) has accepted the position of Kane County (Ill.) Veterinarian, at a salary of \$4,000 per year. Dr. Ridgway was formerly Marion County (Ill.) Veterinarian.

Dr. Joseph W. Vansant (U. P. '02), of Fox Chase, Pa., has issued a call for a reunion of his class, to be held at the University of Pennsylvania Veterinary School on Alumni Day, June 11, 1927.

Dr. E. B. Parker (K. C. V. C. '17), of Carthage, Ill., has resigned his position as Henderson County Veterinarian to accept an appointment in the U. S. Bureau of Animal Industry, at Chicago.

Dr. W. E. LeCroy (Ind. '14), who has been located at Stronghurst, Ill., as Henderson County Veterinarian, has resigned to accept a similar position in Marion County, with headquarters at Salem, Ill.

Dr. N. S. Mayo (Chi. '89), of North Chicago, Ill., delivered an address on "The Training and Care of Army Horses," before the officers of the 65th Cavalry Division, March 31, 1927. A large attendance is reported.

Dr. R. G. Flowers (Ont. '06), of Fort Worth, Texas, acted as the official veterinarian at the Southwestern Exposition and Fat Stock Show, March 5-12, 1927. The Show was a record-breaker and one of the most successful ever held.

Dr. Chas. W. Gates, who has been Adams County (Ill.) Veterinarian since 1923, resigned his position, effective January 31, 1927, to accept an appointment in the Bureau of Animal Industry. He will be stationed at Des Moines, Iowa.

Dr. J. S. Anderson (Chi. '94), formerly of Lincoln, Nebr., is now back in private practice in Hastings, Nebr. Dr. Anderson has purchased a residence there and now has under construction a modern hospital, to be fully equipped for the care and treatment of both large and small animals.

Dr. Stanley Brewer (Ind. '18), of Pleasantville, Ind., had a narrow escape from death when his coupe was struck by a train at a road crossing recently. He suffered several cuts and bruises, but was able to walk to the office of a physician for medical attention. The coupe was a total wreck.

Dr. F. L. Harrison (Ont. '07), who has been engaged in general practice at Fairgrove, Michigan, for a number of years, has accepted a position with the Michigan State Department of Agriculture. Dr. Harrison entered upon his new duties April 1, and has been assigned to tuberculin testing and allied work.

Dr. L. C. Drum (Chi. '10), of Gridley, Ill., has been employed as Mountrie County (Ill.) Veterinarian, succeeding Dr. J. R. Taylor, who held the position ever since the organization of county tuberculosis eradication work several years ago. Dr. Drum will receive a salary of \$3,000 per year and pay his own expenses.